RUBY LAKE NATIONAL WILDLIFE REFUGE

NARRATIVE REPORT

FOR 1966

UNITED STATES DEPARTMENT OF THE INTERIOR

FISH AND WILDLIFE SERVICE

BUREAU OF SPORT FISHERIES AND WILDLIFE

RUBY VALLEY, NEVADA

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Summer Temporary

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I. GENERAL

A. Weather Conditions

Recorded temperatures ranged near normal for the winter months, but precipitation fell to below one-half of normal. The snow pack left the high country in March; no good amounts of moisture were received during the spring months.

Only one summer rain, occurring in July, furnished enough moisture for plant utilization; all other amounts merely dampened the dust. High temperatures and strong winds raised evaporation to above normal.

Beneficial amounts of moisture finally arrived the first week of December, when 2.23" fell as rain and wet snow, saturating and preparing the soil.

In Summary, 1966 was a very dry year, with recorded precipitation 58% of normal.

The following chart depicts comparisons:

PRECIPITATION

Month	Snowfall	This month	Normal	Max. Temp.	Min. Temp.	Evap.	Wind (miles)
Jan.	11.0	.18	1.03	52	-10		1135
Febr.	16.0	.67	1.06	46	-17		1153
March	3.0	.23	1.61	73	-09		1517
April		.74	1.15	74	14		1566
May		.52	1.14	83	28		1614
June		.17	1.06	91	33	9.18	1348
July		.87	.53	95	40	11.23	1198
Aug.		.17	.49	92	37	9.27	894
Sept.		.15	.72	98	30	6.55	780
Oct.		.15	1.20	78	12	3.74	634
Nov.		.95	1.40	71	05		641
Dec.	21.0	2.66	1.58	52	-15		886
TOTAL	51.0	7.46	12.97	98	-17	39.97	13,366

B. Habitat Conditions

1. Water

High water reserves from water year 1965 alleviated the shortage of moisture during 1966. Spring flows and water supplies diminished to a point where practically all water entering the collection ditch was required for diked unit levels. The South Sump suffered considerably with water levels dropping approximately 24 inches. Sufficient amounts of water remained for waterfowl brood rearing and the preservation of fish life. Emergent and aquatic vegetation did not suffer to any great extent.

Accumulations of snow are about normal thus far predicting ample water for 1967.

SNOW COURSE READINGS

March 1, 1966

Course	Elev.	Date	Snow Depth	Water Content Inches	Water Content Last Year	Water Content Normal
Cave Creek	7500	3/3	50.0	16.7	13.8	13.1
Hager Canyon	8000	3/3	57.5	16.4	23.5	17.1
April 1, 1966						
Cave Creek	7500	3/30	24.2	10.1	15.4	14.1
Hager Canyon	8000	3/30	28.9	11.5	25.3	20.4

Water content was accumulating at about the normal rate until March, then much of the winter's snow melted and no late spring storms occurred.

2. Food and Cover

The marsh habitat produced an abundance of food that easily supplied waterfowl requirements. Extensive areas of pondweeds, water milfoil and coontail were favorite feeding locations. Emergent vegetative growth, hardstem bulrush, remains unchanged and relatively unused.

Upland vegetation remained in fair condition providing enough growth for moderate grazing. Irrigated refuge meadows provided good hay crops and were very attractive to geese when green shoots appeared after mowing.

Eighty-five acres of refuge planted Common Rye was utilized as green browse in the early spring and became extremely popular when the heads matured. The fields were lightly disced shortly after grain maturity in order to reseed before waterfowl completely gleaned all the remains.

II. WILDLIFE

A. Migratory Birds

Total annual waterfowl use decreased in 1966 from 6,015,331 to 5,925,668 use days, down approximately 1%. (See following graphs) This slight decrease resulted mainly from two minor shiftings: (1) a shorter period of stay during the migration months (2) a reduced number of coots. The cold snap in October moved birds that would have normally remained for a longer duration.

Redhead, mallard, pintail and canvasback use accounted for more than half the total duck use days, with gadwall, green-winged teal, widgeon, ruddy and cinnamon teal supplying the bulk of the rest.

Trumpeter swans continued to have their reproductive foot forward and produced 13 cygnets - nine of which developed to flight age. Franklin Lake (off refuge) for the second consecutive year attributed one brood. The winter trumpeter population remains practically static. Natural reproduction (43) since transplantation indicates that the number of adults should be gaining. There could be a number of answers to the situation, here are three:

1. Dispersion of population: During the nesting season only 7 pairs (14 birds) are using the refuge. Other birds have moved out to parts unknown. The wintering population usually numbers from 20 to 24.
2. Not returning to Ruby to winter: Birds may have located other wintering areas. Similar habitat occurs in Steptoe, Goshute, Antelope, Independence, Huntington and Diamond Valleys. The Humboldt River and the more distant Snake River are other possibilities.
3. Could it be possible that some trumpeters are migrating with the whistlers?

An early cold snap in late October moved fair numbers of whistling swans into this area. Usually their main migration occurs in December when the refuge marshes are completely frozen. Approximately 600 birds used refuge waters throughout November.

The following chart summarizes waterfowl use by species for the last ten years:

TEN-YEAR WATERFOWL COMPARISON BY SPECIES

SPECIES	YEAR									
	1957	1958	1959	1960	1961	1962	1963	1964	1965	1966
Mallard	933,400	930,920	1,301,685	771,216	736,400	561,394	596,925	335,825	441,525	407,575
Gadwall	114,000	126,150	157,470	98,770	72,940	83,684	82,775	133,910	146,650	162,225
A. Widgeon	113,500	300,060	366,595	143,782	282,450	72,898	271,425	126,525	301,840	95,900
Pintail	708,100	838,656	1,803,177	713,288	548,100	540,162	869,400	339,325	363,825	524,125
G. w. Teal	370,800	167,500	1,348,950	169,154	193,410	292,887	254,800	137,725	180,705	112,525
B. w. Teal	0	0	10,100	5,174	7,000	14,357	7,490	9,940	35,665	9,590
Cinn. Teal	114,900	78,350	139,125	66,556	59,500	101,402	101,220	81,445	136,625	179,550
Shoveler	54,200	52,367	108,644	125,250	55,790	44,814	113,225	69,405	91,315	72,695
Wood	0	0	0	0	0	0	0	175	3,570	3,500
Redhead	1,031,700	1,249,132	384,019	422,390	94,430	108,066	163,170	236,215	246,855	369,775
Ring-necked	2,700	2,257	28,794	48,853	19,355	14,700	11,515	19,040	45,850	54,600
Canvasback	416,200	431,132	230,734	191,978	48,510	58,198	79,695	205,975	173,740	194,075
L. Scaup	101,950	108,486	40,042	68,440	42,150	34,279	46,865	70,560	59,000	78,925
C. Goldeneye	65,800	36,216	19,547	29,799	14,455	9,100	7,560	14,455	7,420	26,425
B. Goldeneye	0	0	0	0	0	0	490	0	0	0
Bufflehead	100,600	26,942	46,569	25,821	11,410	33,110	32,445	48,440	51,520	48,125
Ruddy	83,300	38,194	123,968	49,930	32,425	31,885	102,725	77,420	93,200	94,675
C. Merganser	2,500	125	0	1,575	1,260	2,100	0	1,400	840	1,190
R. b. Merg.	0	0	0	0	0	0	140	910	1,715	420
Hooded Merg.	0	1,200	0	0	0	0	1,050	175	0	0

It was interesting to note that wood ducks were not recorded in census figures until 1964.

Waterfowl production data consisted of breeding pair counts in April and May combined with periodic brood counts throughout the remainder of the production period. Ducks produced 6,415 young, or 80% above their normal.

Goose production coincided with good weather and an excellent hatch occurred. The 390 goslings raised production 25% above their ten-year average.

Coot production continued on a high level, approximately 65% above average.

Waterfowl production figures for 1966 are summarized below:

WATERFOWL PRODUCTION - 1966

Mallard	1,160
Gadwall	540
Baldpate	60
Pintail	70
Blue-winged Teal	50
Cinnamon Teal	1,290
Redhead	1,170
Canvasback	850
Scaup	530
Ruddy	280
Shoveler	175
Ringneck	240
DUCKS TOTAL	6,415
SWANS TOTAL	13
GEESE TOTAL	390
COOTS TOTAL	8,000

The following chart summarizes waterfowl production data for the ten-year period 1957-66:

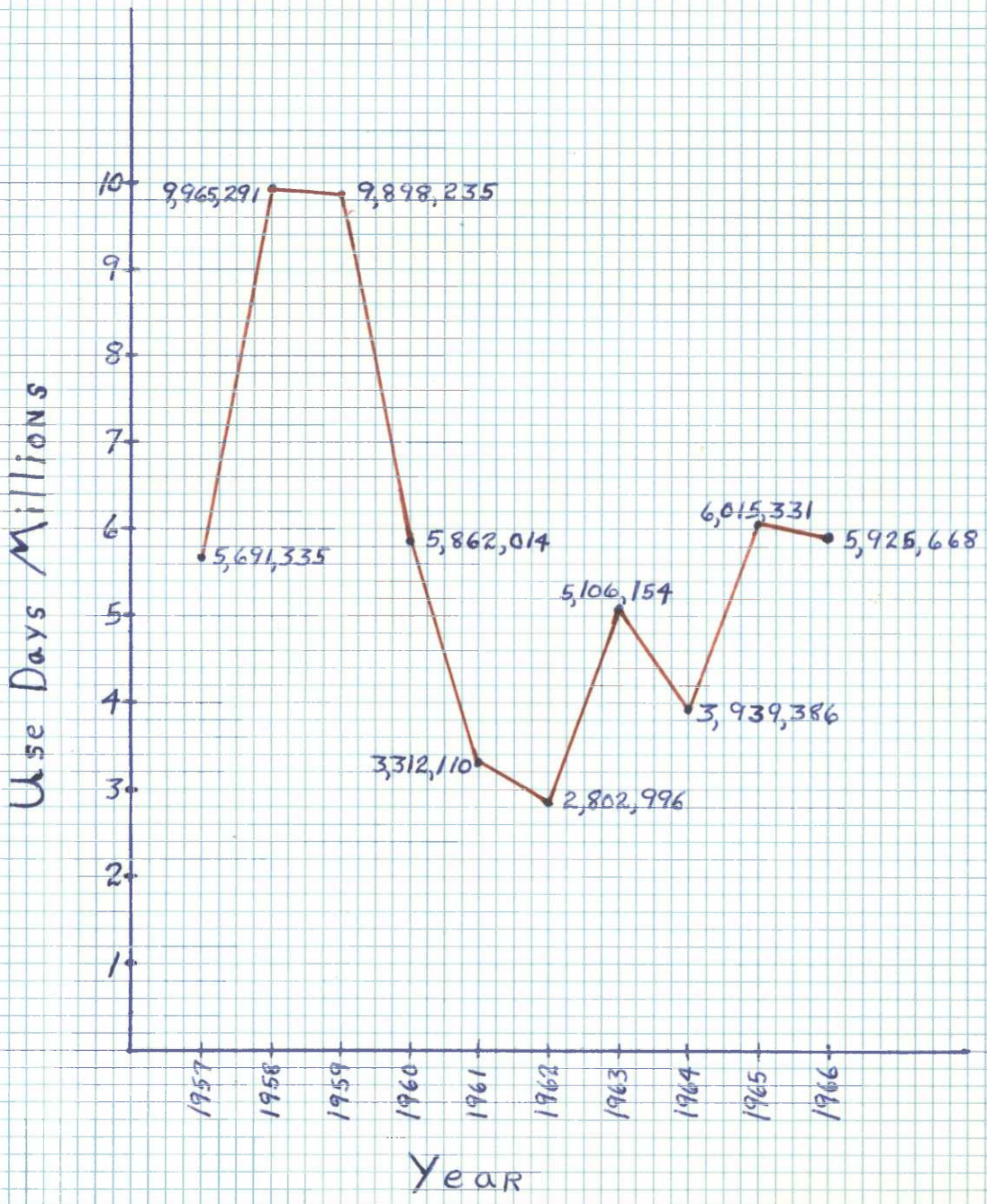
TEN-YEAR WATERFOWL PRODUCTION DATA

	Swan	Geese	Ducks	Coots	Total
1957	0	550	1,960	3,290	5,800
1958	6	322	2,302	3,870	6,500
1959	0	200	5,445	3,000	8,645
1960	3	292	5,430	6,500	12,225
1961	2	400	3,875	2,000	6,277
1962	0	350	1,300	2,500	4,150
1963	13	150	3,530	8,000	11,693
1964	0	130	3,300	6,000	9,430
1965	13	260	3,680	12,600	16,553
1966	13	390	6,415	8,000	14,818

The two graphs on the following pages compare total waterfowl days use for the past ten years and comparable five year use by species.

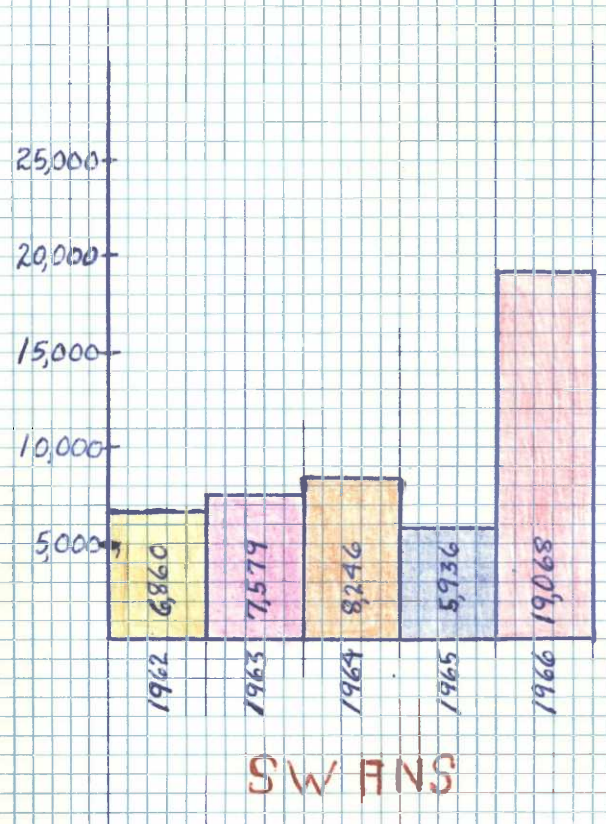
COMPARATIVE TEN-YEAR TOTAL WATERFOWL USE

January 1 to January 1

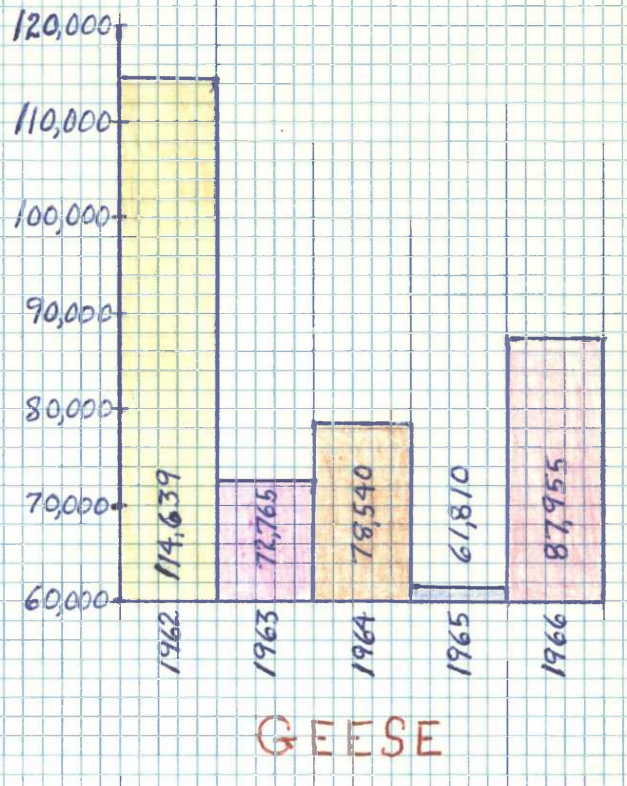


COMPARATIVE USAGE BY SWANS, GEESE, DUCKS AND COOTS

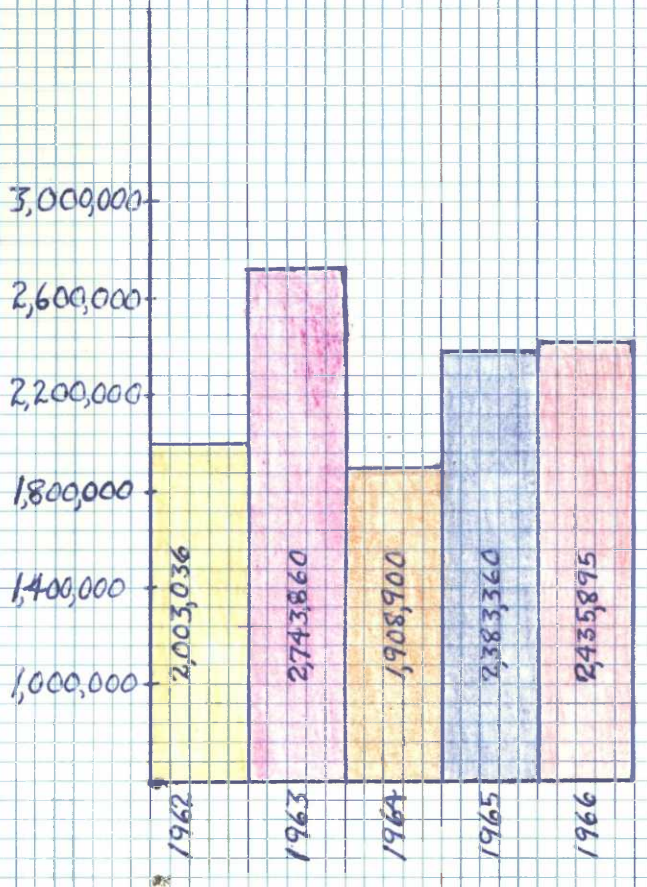
January 1 to January 1



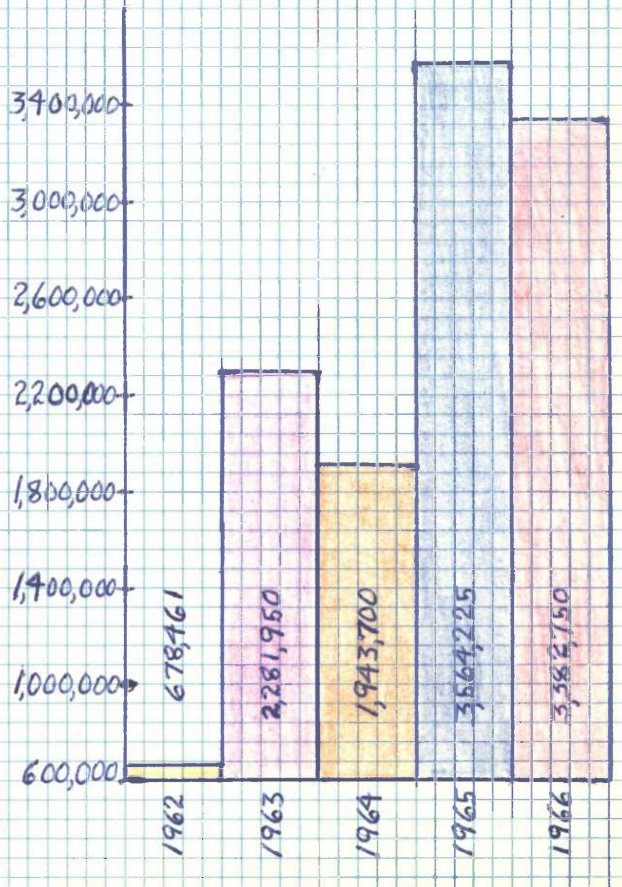
SWANS



GEESE



DUCKS



COOTS

B. Upland Game Birds

Four types of upland game birds frequent the refuge - sage grouse, California valley quail, gray and chukar partridge. Populations are remaining relatively static with slight fluctuations occurring in sage grouse and chukar partridge numbers.

Since introduction of the California valley quail, by the Nevada Fish and Game in 1963, dispersion has occurred. Small coveys have been observed up to 24 miles from the site of introduction.

C. Big Game

Approximately 1,000 mule deer used refuge lands during their spring migration - groups ranged from 10 to 200. The main summer range for these deer lies in the Ruby Mountains; this range extends from south of the refuge to 70 miles north.

Each year several does choose to raise their fawns in the willow patches below headquarters.

Moderate to heavy hunting occurred along the refuge boundary. An early, cold snap and snow storm the first weekend of the season moved good numbers of deer toward their wintering areas. Fall migration continued at a steady pace throughout the remainder of the season. A heavy snow storm in early December moved the remaining deer southward.

Groups of 7 to 27 mule deer were nightly visitors to the headquarters lawn during most of the open season.

D. Fur Animals, Predators, Rodents and Other Mammals

The Fur Management Plan for Ruby reveals the need for maintaining a high population of muskrats with considerations to disease factors and water levels. A high population is necessary in order to use the muskrat as a tool in the attempts to control the vast areas of hardstem bulrush with the resulting benefits to waterfowl. It is believed that trapping tends to invigorate the populations reproductive capacity and render it more resistant to disease.

Observations, both aerial and on the ground, revealed approximately 15,000 to 20,000 muskrats using the marsh resulting in minor damage to dikes and other water control structures.

No beaver have been observed since 1963. The coyote and bobcat populations have increased to a level where moderate

control measures will be instigated in 1967. Both coyotes and bobcats have been harassing the muskrat population. In certain areas, many houses and feeders have been destroyed and remaining evidence shows at least some predation on muskrats has occurred. It is felt that the animals are, also, investigating the dwellings for small rodents. The two predators main diets are jackrabbits, cottontails and smaller rodents. The rodent population has noticably declined in 1966.

Tracks of mountain lion were noted in the southern portion of the refuge. The lion population tends to follow the migrating mule deer to their wintering grounds. Approximately two lions are harvested annually by the Division of Wildlife Services.

Few mink are present, but weasels, short and long-tailed, have good populations. Porcupine are often seen along the western side of the refuge, and badgers are increasing in numbers. Black-tailed jackrabbits, pigmy rabbits and mountain cottontails remain at comparatively low numbers.

E. Hawks, Eagles, Owls, Crows, Ravens and Magpies

Turkey vultures arrived approximately on time; a vanguard of two appeared at headquarters on March 16. The entire group appeared in a few days, and soon 50 to 75 were using their traditional roost in the aspens and cliffs behind headquarters. The vultures left on schedule, the last observation occurring October 7.

Both cooper's and red-tailed hawks are common. Dark and light forms of rough-legged hawks use refuge lands during the cold part of the year. The light, or standard,form being most numerous. Three pairs of golden eagles nested near the refuge, while one bald eagle was seen in January and again in December. Marsh hawks are readily seen. They hunt the lowlands for food the entire year, being more numerous during the summer months. Many ground observations have revealed remains of muskrats, ducks, coots, rodents and snakes. One osprey, a rare visitor, appeared during late spring. Several prairie falcons were regularly seen in the late fall. Sparrow hawks were very common throughout most of the warm months.

Great horned owls are often seen evenings and their call can always be heard at night. Short-eared owls are observed less though they are not uncommon. Saw-whet owls appeared frequently in the mist nets. Magpies are ever present and in good numbers. Ravens are present the year around, though seldom in groups larger than 6 to 10. Crows, however, are visitors from early spring until late fall or early winter forming

flocks of 150 to 250 birds. The willow patches are favorite fall roosts.

F. Other Birds

About 27 perching birds have been added to the refuge bird list since mist netting operations were initiated three years ago.

Starlings, first observed in 1948, have become residents and several nests have been found. A surprising discovery disclosed that large numbers were passing through the refuge during their migration. (See banding operations)

G. Fish

Those hearty opening-day fishermen braved blizzard conditions and welcomed in the 1966 trout season on January 9. Easy limits and large fish were caught - 11¼ lb. brown, 10 lb. rainbow and 5 3/4 lb. brook. The trout fishery slowed during the summer months, but when waters cooled late fall fishing produced many good limits.

The largemouth bass decided to feature an early biting spree during the month of March. This is unusually early for good bass fishing. The Brown Dike, being the concentration point, produced as high as 1,000 1½ lb. to 2 lb. bass in a single day. This activity continued for approximately 12 days, then something turned the switch to "off". When bass fishing again became productive in mid-summer, cars numbered as high as 175 on the dikes and boat launching areas. Bass conditions were excellent in the South Sump. Boat fishermen were amazed at the quality and quantity of fish available.

The Nevada Fish and Game required 4,300 bass for transplanting and stocking other waters in the state. The following chart depicts this cooperative transplantation program initiated in 1959:

LARGEMOUTH BASS TRANSPLANTED

Year	Number	Destination
1959	6,280	Lyon, Churchill, Washoe, Pershing and White Pine Counties
1960	3,200	Western Nevada Counties
1961	8,566	Various areas throughout state
1962	4,659	Stillwater Refuge and nearby areas
1963	5,087	Stillwater Refuge and Rye Patch Reservoir
1964	3,225	Western Nevada Counties
1965	5,735	Stillwater Refuge and Sunnyside Management Area
1966	4,308	Reno area and White Pine County
	41,060	TOTAL - transplanted to date

Very little trout reproduction occurs in refuge waters. This fishery must be on a planting program regulated to meet the fishing demand. The following chart summarizes this program by species:

TROUT PLANTED IN REFUGE WATERS 1966

	Rainbow			Brook			Brown		
	No.	Lbs.	Size	No.	Lbs.	Size	No.	Lbs.	Size
Feb.	150	50	9-10"						
April	5,955	2,000	9-10"						
	6,200	2,000	9-10"						
	3,400	1,000	8-10"						
May	8,250	1,800	7-9 "	89,400	149	1-2 "			
				6,068	820	6-8 "			
July	75,690	261	2-3 "	29,388	124	2 "	1,687	625	9-11"
	7,014	1,670	7-9 "						
Aug.				3,236	1,407	10"	1,875	625	9-10"
Sept.				2,440	1,220	10-12"	1,640	781	10-12"
TOTAL	106,659	8,781		130,532	3,720		5,202	2,031	

GRAND TOTAL FISH 242,393 LBS. 14,532

H. Reptiles

Various small lizards and several non-poisonous snakes were frequently found throughout the refuge area during the warm months. Very few rattlesnakes appeared.

I. Disease

No diseases were detected in any of the wildlife populations. Grazing permittees reported that only a small number of cattle were affected by disease.

III. REFUGE DEVELOPMENT AND MAINTENANCE

A. Physical Development

1. The experimental rejuvenation of Unit 21 has survived its' third year with photo stations revealing no vegetative change as far as hardstem regrowth is concerned. Waterfowl use shows a significant increase.

2. Spring-head Development Program.
A complete spring-head survey has been conducted, revealing 137 sources of refuge water. Since initiation of the project in 1963, 46 springs have received treatment. Wintering waterfowl have benefited from these enlarged open water areas. The trumpeter swan receiving most of the rewards.

3. Bulrush Plowing East Sump.
Approximately 150 acres of hardstem bulrush were plowed with a 4-bottom moldboard plow. Plowed circular strips 20 feet wide were alternated with 20 foot portions left in natural hardstem growth. After reflooding, the turned soil will provide open water areas with natural cover readily available for protection and nesting.

Other maintenance projects either accomplished or in progress are as follows:

1. Water manipulations in all units.
2. Purchased and installed permanent combination storm doors and screens on office.
3. Repair of cattle guard wings.
4. Constructed and set out 21 "Dill" type goose nesting platforms.
5. Re-built, painted, moved and set up outhouse at Public Water Skiing Area.

6. Assembled landing mat for boat landing.
7. Disced fields and planted 85 acres of common rye.
8. Control burning of about 200 acres of brush.
9. Constructed 1,500 bushel granary and laid concrete floor.
10. Planted and irrigated 408 trees in headquarters wind break.
11. Maintained headquarters lawn.
12. Emptied 30 litter barrels weekly during the summer.
13. Sprayed dike system for Canada thistle and other noxious weed control.
14. Repaired and replaced boat channel markings.
15. Re-graveled boat-landing parking area.
16. Salvage of usable materials from State Hatchery.
17. Repaired large valve at old generator house.
18. Repaired outhouse doors.
19. Clutch repair TD-9 loader.
20. Constructed 20' X 40' decoy-type blackbird trap.
21. Assembly and placement of three 16' windmill towers including pumps, foundations and tanks.
22. Replaced 300' of washed out interior fence.
23. Re-wired three duck traps.
24. Replaced Public Hunting Area boundary markers.
25. Repair and refinished boat and boat trailer.
26. Filled road washout in Unit 21.
27. Re-located Shanty Town dump to more secluded spot.
28. Maintenance and repair of equipment.
29. Drilled 130 acres of crested wheat.
30. Graded dike and access roads.
31. Ten picnic tables were repaired and refinished.
32. All dikes, roadsides and headquarters areas were mowed for weed control.
33. Conducted regular fire drills and SAFETY meetings.

B. Plantings

1. Aquatic and Marsh Plants

None.

2. Trees and Shrubs

Four hundred trees of the following species were planted as a windbreak in the headquarters area:

a. Pfitzer Juniper	50
b. American Plum	50
c. Russian Olive	50
d. Caragana	250
TOTAL	400

Five chinese elm and three box-elder were planted to beautify the refuge lawn.

3. Upland Herbaceous Plantings

None.

4. Cultivated Crops

The 85 acres of common rye were disced then lightly re-seeded in the thinner growths. Lightly discing in the fall, after moisture becomes available, yields quantities of mature grain for waterfowl food and enough seed germinates for next year's crop.

C. Collections and Receipts

1. Seeds or Other Propagules

The following grains were received during 1966:

a. Common Rye	3 Bu.
b. Wild Millet	19 Bu.
c. Henchen Barley	200 Bu.
d. Roundstem Bulrush	4 Bu.
e. Milo	36 Bu.

2. Specimens

One trumpeter swan cygnet, who died of unknown causes, was sent to the U. S. National Museum in Washington, D. C. for mounting purposes.

Forty-seven perching birds were collected during mist netting operations. We intend to have these birds mounted by the Nevada State Museum in a display entitled "Northeastern Nevada Wildlife".

D. Control of Vegetation

All refuge dikes and roadsides, as well as the headquarters area, were mowed in order to keep these locations attractive and accessible.

Dikes were sprayed with 2-4-D Amine at two pounds acid equivalent per acre. The spraying coincided with the bud stage of the Canada thistle for more effective control.

No sage, rabbitbrush or greasewood received treatment.

E. Planned Burning

Portions of the North and East Sumps were burned during late fall to control dense growths of hardstem bulrush. The

resultant temporary openings are readily utilized by waterfowl for feeding and broodings purposes. Occasionally, a permanent opening is created by a peat fire that has burned to mineral soil.

Controlled burning proves to be the most effective and economical method for removal of sage and rabbitbrush where there is sufficient grass understory to carry the flame. All future sites designated for this treatment will be handled in this manner.

F. Fires

No fires occurred and no refuge personnel were called upon to assist on outside fires.

IV. RESOURCEMANAGEMENT

A. Grazing

Seven grazing permits were in effect this year: Orieal Saxton (24 horses, 150.81 AUM's); Walter Gardner (595 cattle, 1,681.65 AUM's); Raymond Gardner (266 cattle, 23 horses, 985.92 AUM's); Duval Ranching Co. (604 cattle, 10 horses, 3,413.08 AUM's); Fort Ruby Ranch (129 cattle, 516.46 AUM's); Glenn Ackerman (3 horses, 2.0 AUM's); and Phillip Mariluch (1 horse, 4.0 AUM's). A total of 6,748.52 AUM's utilized at the rate of $1.50/cow AUM and $2.00/horse AUM, with a grand total of $10,227.26.

Range conditions were moderate to good on refuge lands. Bureau of Land Management and Forest Service lands did not fair as well. Extreme dryness restricted these outside grazing allotments putting more pressure on the refuge. The refuge range still remains in good condition.

B. Haying

The Duval Ranching Company annually irrigates and mows three wild hay meadows totaling 300 acres. A small amount of hay is stacked for emergencies, such as late storms and/or later fed on an AUM basis. The remainder is bucked into small piles and thus more properly utilized by grazing cattle.

C. Fur Harvest

The original recommended muskrat harvest for the 1965-66 season was set at 5,000 animals - 2,500 from the diked units

and 2,500 from the South Sump. Trapper quotas were reached before they had covered well populated areas in the South Sump. One thousand more animals were added to their quotas. When trapping ceased, 6,036 muskrats were on the tally sheets.

It appears that the harvest of 3,000 muskrats from the diked units curbs the unusually high populations. However, the South Sump needs more intensive trapping for numbers increased and animals spread to all available habitat. It was therefore recommended that quotas be raised to 7,000 for the 1966-67 season. This harvest is now in progress with 2,974 muskrats on stretchers by December 31.

The chart below summarizes muskrat populations by seasons:

MUSKRAT POPULATION AND HARVEST FIGURES

Season	Est. Population	Rec. Harvest	Actual Harvest
1961-62	5,000	0	0
1962-63	10,000	3,000	3,179
1963-64	10,000	2,500	2,622
1964-65	10,000	3,000	3,292
1965-66	15,000	6,000	6,036
1966-67	15-20,000	7,000	2,974 (12/31/66)

Refuge trapping is operated on a share basis with the refuge receiving 25% of the cured hides. Both the trappers and the refuge sold their hides to the Seattle Fur Exchange with lots averaging $1.54 and $1.64 respectively. Kits and damaged sold for $.70 - a good price.

Furs for the 1965-66 season graded as follows:

FUR GRADING

Grade	Number	Percent
Extra large	140	3
Large good	2,197	36
Large slights	326	5
Medium good	1,741	29
Medium slights	381	6
Small good	466	8
Small slights	235	4
Kits & damaged	550	9
	6,036	100

(See Muskrat Investigations V,C)

D. Timber Removal

None.

E. Commercial Fishing

None.

F. Other Uses

None.

V. FIELD INVESTIGATIONS OR APPLIED RESEARCH

A. Coot Investigation

Seven hundred four American Coot received bands in 1966 - 492 trapped in March and the remaining 212 during pre-season waterfowl banding operations. This is becoming an interesting project. Returns are low, but continue to be wide-spread and varied. Outstanding recoveries are from La Trozada Nayarit and Marmol, Sinaloa, Mexico, northward to Saskatchewan, Canada. The Canadian recovery coded "Killed by car" raises some doubt as to the migratory habits of this bird. Was it walking or hitch-hiking!

B. Hydrologic Investigation

This research practically came to a stand-still. The only data collected were approximately ten water samples from the larger springs in the valley. The refuge will be furnished a copy of the PhD thesis when completed.

C. Muskrat Investigation

During the 1965-66 trapping season 1,281 animals were aged by pelt primness patterns and 557 fresh specimens were sexed, aged, measured and weighed. Information on populations and their locations, plus animal condition, trapping intensity and harvest areas was recorded.

Trapping intensity and harvest on the developed units compared to last year. Nine hundred twenty-eight trap sets per 1,070 acres or one trap set per 1.2 acres is considered to be very light trapping pressure.

When all areas of the marsh are considered this ratio of number of sets per acre still holds true at 1.2 acres per trap set. Harvest figures indicate only 1.8 muskrats are taken per acre of marsh, also very low. (Table 1)

Sex and age ratios, shown in Table 2, verify that the muskrat population is expanding in a vigorous, prolific condition.

A project of this type required close cooperation between trapper and investigator in order to obtain usable data. Jack Lemback, Slim Saxton and Johnny Saxton should be credited for keeping excellent records.

Tables No. 1 and No. 2 depict some of the data being gathered, but by no means indicate the extent of available information.

TABLE NO. 1

TRAPPING PRESSURE AND HARVEST
ON SAMPLE UNITS 1965-66

Unit	Acres	No. Trap Sets	Sets/Acre	Catch	Catch/Set	Catch/Acre
10*	280	283	1.01	505	1.08	1.80
13*	115	112	.98	209	1.77	1.08
14*	265	240	.91	625	2.60	2.36
20*	255	257	1.01	517	2.01	2.03
21*	155	36	.23	88	2.44	.57
Sub.*	1,070	928	.87	1,944	2.09	1.81
22**	380	190	.50	650	3.42	1.71
28**	455	475	1.05	785	1.66	1.75
Sub.**	835	665	.80	1,435	2.16	1.72
Total	1,905	1,593	.84	3,379	2.12	1.77

*Diked, developed marsh 12-36" deep with little fluctuation.
**Natural, unmanaged marsh contiguous with developed units.

TABLE NO. 2

SEX AND AGE RATIOS

		No.	AD:IMM	AD.MALE:AD.FEM:IMM
Fresh Animals	12/1-12/15/65	256	100:191	126 : 100 :456
Fresh Animals	12/16-12/31/65	134	100:179	220 : 100 :473
Fresh Animals	1/1-1/15-66	167	100:234	117 : 100 :509
		557	100:201	154 : 100 :479
Cured-Pelt Primeness	12/1-12/15/65	716	100:132	
Cured-Pelt Primeness	12/16-12/31-65	90	100:130	
Cured-Pelt Primeness	1/1-1/15-66	475	100:134	
		1,281	100:214	

D. Waterfowl Banding

Pre-seasom waterfowl banding commenced 8/11/66 when 3 funnel-type traps were activated. High water conditions presented some difficulties at the permanent pintail banding site. One new trap was constructed for use on the east side of the South Sump during September and October. All waterfowl occurring in the traps were banded. Sixty-two trap days produced the following results:

Species	No. Banded
Canada Geese	31
Mallard	500
Pintail	361
Redhead	60
Cinnamon or Blue-winged Teal	35
American Widgeon	10
Canvasback	4
Green-winged Teal	4
Lesser Scaup	1
Wood Duck	1
American Coot	704
	1,711

SIGNIFICANT RECOVERIES: 1966

Species	Banded at		Recovered at	
Brown-headed Cowbird	Ruby Lake N.W.R.	05/13/65	Vashion Island, Washington	05/--/66
Pintail	"	03/10/60	Ahome Sinaloa, Mexico	02/01/66
American Widgeon	"	10/11/65	Progresso, Yucatan Mexico	02/15/66
American Coot	"	03/15/66	Edgeley, Sask.	05/27/66
Mourning Dove	"	05/24/65	Four Lakes, Wash	09/17/66
Mourning Dove	"	06/10/66	Ft. Hancock, Texas	09/04/66

E. Mourning Dove Banding

Mourning dove banding commenced May 9 when 37 funnel type traps were set in proven patterns at the Fort Ruby Ranch sheep corrals.

Fewer birds migrating in smaller groups resulted in 262 captures during 52 trap days. Concentrations of birds did not materialize.

F. Seeding Trials - Standard Soil and Range Survey

The Standard Soil and Range Survey did not require seeding trials in 1966. The 29,000 acre survey, at present, is three-fourths complete. The complete program entails an aerial mosaic map, soil analysis, vegetative cover map and range conditions signifying management techniques, as well as corrective measures. This information will provide basic background for the Economic Use Plan and Soil and Moisture programs.

The entire survey, conducted by the Soil Conservation Service, will be accomplished with very little expense to the refuge.

G. Passerine Bird Banding

Total banding operations also included the following perching birds and others. The starlings and blackbirds were trapped in a 20'X40' decoy trap baited with grain. The smaller birds were mist-netted in the timber growth along Cave Creek by the Refuge Manager.

Species	No. Banded	Species	No. Banded
Starling	691	Yellow-bellied Sapsucker	2
Yellow-headed Blackbird	555	Saw-whet Owl	2
Red-winged Blackbird	245	Black-billed Magpie	2
Brewer's Blackbird	80	Belted Kingfisher	1
Barn Swallow	41	Green-tailed Towhee	1
White-crowned Sparrow	41	Yellow-shafted Flicker	1
Brown-headed Cowbird	36	Western Meadowlark	1
Swamp Sparrow	31	Yellow-breasted Chat	1
Robin	13	Cedar Waxwing	1
Oregon Junco	9	Downy Woodpecker	1
Western Tanager	7	House Sparrow	1
Black-headed Grosbeak	4	Wilson's Warbler	1
Cassin's Finch	4	Chipping Sparrow	1
MacGillivray's Warbler	4	Ruby-crowned Kinglet	1
Yellow-Warbler	3	American Goldfinch	1
Lark Sparrow	2	Empidonax Flycatcher	1
Savannah Sparrow	2	Pied-billed Grebe	1
Western Yellowthroat	2	TOTAL	1,792
Vesper Sparrow	2		

H. Bass Tagging

Approximately 1,000 catchable-size largemouth bass have been captured, tagged and released in various refuge waters. The purpose of this study is to evaluate angler harvest, bass growth rates and their movements. Participating cooperation involves the Nevada State Fish and Game, Fisheries Management Services and the refuge. At present, tag recoveries have not been analyzed.

I. Canada Goose Transplant

Completion of the second year cooperative venture between the Bureau and the Nevada Fish and Game resulted in the transplantation of 12 more pair of Canada goose goslings from Ruby Lake to the more southerly Sunnyside Management Area. The State will hold the young birds flightless until the third year after capture. This project will continue through 1967, with hopes of establishing a breeding nucleus at Sunnyside.

J. Goose Nesting Platform Trials

Thirty-one "Dill" type nesting platforms have been placed in various locations throughout the marsh. Four different basket heights have been constructed, ranging from four to seven feet. Baskets are filled with meadow hay, a tire placed on top to hold the hay and encourage the goose.

More baskets will be placed in 1967, plus a conducted evaluation of their usefulness.

VI. PUBLIC RELATIONS

A. Recreational Use

Total annual recreational visitations increased by 11,500 visitor days, up 57%. Ten thousand of these days were attributed to fishing, while hunting rose from 500 to 600. This tremendous increase is a direct result of extreme dryness in northeastern Nevada. Many streams, reservoirs and springs completely evaporated or ceased to flow. Formerely local "hot spots" became unproductive. People were lured toward refuge waters for two reasons: (1) No other readily available water source of this type existed in northeastern Nevada, and (2) Excellent fishing - 242,393 trout, rainbow, brook and brown, were planted in refuge waters, plus an outstanding largemouth bass fishery.

National and local publicity tremendously aided the sale of the Federal Recreation Conservation Permit. Ruby was designated as a Federal Recreation Area from May 28 through September 5. Two hundred seventy-six $7 "Golden Eagles" and 208 "Day Use Permits" were purchased by the visiting public.

B. Refuge Visitors

Official visitors to the refuge were:

Name	Affiliation & Address	Date
Glenn Bradley	U.S. Forest Service, Wells, Nevada	1/7/66
Doyle Littledyke	U.S. Forest Service, Wells, Nevada	1/7/66
John S. Lusk	Div. Wildlife Services, Elko, Nev	3/28/66
Doyle Littledyke	U.S. Forest Service, Wells, Nevada	4/15/66
Robert Rowen	U.S. Forest Service, Elko, Nevada	5/6/66
O. B. Howe	State B.L.M., Reno, Nevada	5/13/66
Leonard Hoskins	Nevada Fish & Game, Elko, Nevada	5/24/66
Jack Dieringer	Nevada Fish and Game, Reno, Nevada	5/24/66
Patrick Coffin	Nevada Fish and Game, Elko, Nevada	5/23
Dale Lockhard	Nevada Fish and Game, Ely, Nevada	thru
Bob Sumner	Nevada Fish and Game, Reno, Nevada	5/26/66
James Birch	U.S. Game Mgt. Agent, Reno, Nevada	6/20
Gene Wilson	U.S. Game Mgt. Agent, Las Vegas, Nev	
Vic Oglesby	Nevada Fish and Game, Reno, Nevada	thru
Don Dobel	Nevada Fish and Game, Elko, Nevada	6/24
Don Fowler	University of Nevada, Reno, Nevada	7/1/66
Youth Center cadre and	21 youth Center boys	8/4 & 5/66
Mr. Mayers	Nevada Highway Dept., Elko, Nevada	8/4/66
Mr. Wallace	Sewer Inspector, Elko, Nevada	8/4/66
Gene Hershey	U.S. Weather Bureau, Salt Lake City	8/5/66
Vernon Ekedahl	BSF&W, Regional Supervisor, Portland	10/3 & 4/66
Gibson E. Bassett	BSF&W, Personnel Officer, Portland	10/11 & 12/66
Ed Spencer	Soil Conservation Service, Elko, Nev	11/1/66
James Birch	U.S. Game Mgt. Agent, Reno, Nevada	11/3/66
Lawrence Dudley	McNary N.W.R., Burbank, Washington	11/8/66
D. J. Johnson	Soil Conservation Service, Wells, Nev	12/15/66
Harry Opfar	U.S. Forest Service, Wells, Nevada	12/15/66
Doyle Littledyke	U.S. Forest Service, Wells, Nevada	12/15/66
Raymond Glahn	BSF&W, Pilot-Biologist, Portland	5-visits

C. Refuge Participation

Lewis - Attended annual full commission meeting of Nevada Fish and Game Commission. Met with Supervisor Ekedahl, other refuge managers in Nevada and the executive board for discussion of refuge programs.

Lewis - Attended monthly meetings of the Elko County Game Management Board.

Lewis - Met with Nevada State Highway Board, which included Governor Sawyer and Elko County Commissioners. Entered discussion on paving of Ruby Valley road.

Lewis - Attended Refuge Work Shop at Benton Lake and Great Falls.

Lewis - Numerous meetings with Soil Conservation Service technicians on Refuge Soil and Range Survey.

Lewis - Two slide shows on refuge wildlife to Elko Lions Club.

Lewis - Met with local National Guard to locate "camp-out" on refuge lands.

Lewis - Slide show to Ely Chamber of Commerce and Mines on refuge development.

Lewis - Discussed clean-up and relocation of Shanty Town dump with Bureau of Land Management District Manager.

Lewis - Contacted Elko Sportsman Club on construction of goose nesting platforms.

Lewis - Delivered County Refuge Receipt checks to both Elko and White Pine Counties.

Lewis - Wildlife slide show to Elko Civic Club.

Lewis - Attended occasional meetings of Elko Sportsman's Club.

Lewis - Met with Supervisor Ekedahl and other Nevada Refuge Managers and Nevada Fish and Game personnel on refuge fishing regulations.

Larochelle - Attended Nevada Section of American Society of Range Management annual meeting at Ely, Nevada.

Larochelle - Attended California-Nevada Section of The Wildlife Society annual meeting at Reno, Nevada.

Larochelle - Attended Executive Council meeting of Nevada Section of the American Society of Range Management at Reno, Nevada.

Larochelle - Showed 32 films to Ruby Valley Schools. These films were also shown to Refuge and State Fish Hatchery families at evening get-togethers.

Larochelle - Directed Nevada Youth Training Center boys in refuge dike litter cleanup.

Larochelle - Directed Elko Boy Scout Troop in refuge dike litter cleanup.

Lewis and Larochelle - Attended Sherman Creek range fire rehabilitation tour.

D. Hunting

Waterfowl hunters developed a great deal of enthusiasm when the season opened. Good numbers of divers, mainly redheads and canvasbacks, were congregated in the Public Hunting Area. One hundred fifteen hunters participated during the opening weekend bagging 118 birds. Success and enthusiasm gradually declined as the season continued. Hunter visits increased by 100 days, an even 20% above the 1965 season. Hours spent in the field totaled 2,400.

E. Violations

The refuge law enforcement program combines Nevada Fish and Game and refuge personnel, results of this activity are listed below:

4/8/66	Griffith, James C.	Speeding on refuge	$10.00
4/14/66	Moore, Walter S.	Fishing closed area	50.00
4/23/66	Griggs, Augusta M.	Illegal methods (two poles)	50.00
5/28/66	Marsh, Jack B.	No fishing license	50.00
6/8/66	Bauman, Shirley J.	Illegal methods (two poles)	50.00
6/18/66	Kistler, Ronald W.	No fishing license	50.00
6/19/66	Zigich, Mike	Unnumbered motor boat	10.00
9/4/66	Linnick, Albert R.	No fishing license	60.00
9/4/66	Young, Harvey Jr.	Unregistered motor boat	10.00
	" " "	No fire extinguisher	10.00
9/5/66	Panagopoulas, George	No life jackets.	10.00
		TOTAL	$360.00

VII. OTHER ITEMS

A. Items of Interest

The lost-time accident record now stands at 4,612 days. Our previous record was 63 days.

Assistant Larochelle was elected Zone I Councilman of the Nevada Section of the American Society of Range Management. He is, also, a member of the Executive Council and Chairman of the Displays Committee.

John Jayo, of Elko, and Travis Davis, of Ely, were involved in an unusual boating mishap. During their absence another boater removed the drain plugs from their boats for use in his own new outfit. While returning the plugs another fisherman identified him and informed the refuge manager, who later discussed the matter with the violator. He consented to pay for any damages.

Another boating mishap occurred on July 3. Two boats collided in a small channel in the South Sump. All occupants were thrown from the boats with only minor injuries. One boat was damaged beyond repair.

A young girl was playing with an unidentified snake on July 4. The snake promptly bit her on the thumb braking the skin in two locations. The girl developed a headache and became nauseated. The refuge manager summoned a doctor, but the parents did not wish treatment. The girl recovered and the snake remains unidentified.

Credit is due Mr. Larochelle and Mrs. Lewis for their part in the preparation of this report. It was edited by Refuge Manager Lewis.

B. Photographs

These photographs were taken during the course of refuge activities.

SIGNATURE PAGE

Submitted by:

Donald E. Lewis
(Signature)

Refuge Manager
(title)

Date: February 8, 1967

Approved, Regional Office:

FEB 24 1967
Date:

GHD
VE

John D. Findlay
(Signature)

John D. Findlay
Associate Regional Director
(Title)

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Ruby Lake MONTHS OF January TO April, 19 66

(1) Species	(2) Weeks of reporting period 1/2-8 1	1/9-15 2	1/16-22 3	1/23-29 4	1/30-2/5 5	2/6-12 6	2/13-19 7	2/20-26 8	2/27-3/5 9	3/6-12 10
Swans:										
Whistling							10			
Trumpeter	14	14	14	14	14	14	14	14	14	14
Geese:										
Canada							120	200	250	275
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	200	200	200	200	200	200	275	300	400	500
Black										
Gadwall	25	10	10	10	10	10	25	25	25	25
Baldpate	75	50	50	50	50	50	75	75	100	100
Pintail	100	50	50	50	50	50	75	100	150	225
Green-winged teal	25	25	25	25	25	25	25	25	75	100
Blue-winged teal										
Cinnamon teal									25	50
Shoveler	10									
Wood										
Redhead	100	50	50	50	50	50	75	75	75	100
Ring-necked	100	75	75	75	75	75	75	75	50	50
Canvasback										
Scaup, Lesser	100	75	75	75	75	75	75	75	75	75
Goldeneye	50	50	50	50	50	75	75	75	75	50
Bufflehead	50	50	50	50	50	50	50	50	50	50
Ruddy	25	25	25	25	25	50	50	50	50	75
Other Comm. Merganser						10	10	10		
Red b. Merganser										
TOTAL DUCKS	860	660	660	660	660	720	885	935	1,150	1,400
Coot:	250	250	250	250	250	300	400	450	800	1,300

Int. Dup. Sec.,
Wash., D. C. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Ruby Lake MONTHS OF January TO April , 19 66

(1) Species	(2) Weeks of reporting period: 3/13-19 (11)	3/20-26 (12)	3/27-4/2 (13)	4/3-9 (14)	4/10-16 (15)	4/17-23 (16)	4/24-30 (17)	(18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	(4) Production: Estimated total
Swans:					Aerial						
Whistling	25								245		
Trumpeter	14	14	14	14	14	14	14		1,666		
Geese:											
Canada	275	275	300	300	250	250	250		19,215		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	500	500	750	800	800	800	800		53,375		
Black											
Gadwall	50	75	200	200	300	300	300		11,200		
Baldpate	100	125	175	200	200	200	200		13,125		
Pintail	275	300	450	500	300	300	250		22,925		
Green-winged teal	100	100	150	200	175	150	125		9,625		
Blue-winged teal											
Cinnamon teal	75	75	300	400	300	300	300		12,775		
Shoveler	50	75	75	100	200	200	200		6,370		
Wood											
Redhead	150	150	400	600	900	900	900		32,725		
Ring-necked	50	50	50	50	50	50	50		7,525		
Canvasback	100	100	200	300	800	800	800		21,700		
Scaup, Lesser	75	50	50	50	300	300	275		13,125		
Goldeneye	50	50	50	50	25	25	25		6,125		
Bufflehead	50	75	75	100	75	25	25		6,475		
Ruddy	100	125	200	300	200	200	200		12,075		
Other Comm. Merganser				10					280		
Red b. Merganser				10					140		
TOTAL DUCKS	1,725	1,850	3,125	3,870	4,625	4,550	4,460		229,565		
Coot:	5,000	6,000	8,000	9,000	9,500	9,500	9,500		427,000		

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	1,911	39	
Geese	19,215	300	
Ducks	229,565	4,625	
Coots	427,000	9,500	

SUMMARY

Principal feeding areas Refuge grain fields, collection ditch, developed and undeveloped marsh.

Principal nesting areas

Reported by O. E. Larochelle, Ass't Refuge Mgr.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ruby Lake Months of January to April 1966

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Pied-billed Grebe	Previous	Period	25	4/25-30	Still	Present				75
White-faced Ibis	1	4/23	40	"	"	"				100
American Bittern	Permanent	Resident	80	"	"	"				100
Great Blue Heron	"	"	40	"	"	"				100
Snowy Egret	1	4/10	65	"	"	"				100
Black-crowned Night Heron	2	3/9	60	"	"	"				100
Sandhill Crane	12	3/14	40	"	"	"				75
II. Shorebirds, Gulls and Terns:										
California Gull	1	4/3	3	4/25-30	Still	Present				10
Forster's Tern	3	4/30	10	"	"	"				15
American Avocet	7	4/13	25	"	"	"				75
Common Snipe	Permanent	Resident	5	1/8	"	"				10
Lesser Yellowlegs	2	4/13	25	4/25-30	"	"				50
Western Willet	5	4/13	30	"	"	"				75
Spotted Sandpiper	2	4/15	30	"	"	"				75
Long-billed Curlew	3	4/13	30	"	"	"				50
Killdeer	Previous	Period	75	"	"	"				200

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous	Period	250	4/25-30	Still	Present		600
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Previous	Period	5	2/18	Still	Present		5
Duck hawk								
Horned owl	Permanent	Resident	15	4/25-30	"	"		30
Magpie	"	"	200	"	"	"		400
Raven	"	"	40	"	"	"		100
Crow	25	3/11	40	"	"	"		250
Turkey Vulture	3	3/16	60	"	"	"		80
Marsh Hawk	Permanent	Resident	30	4/28	"	"		75
Cooper's Hawk	Previous	Period	12	3/16-23	"	"		20
Red-tailed Hawk	"	"	10	4/10-15	"	"		20
Rough-legged Hawk	"	"	15	4/10-15	"	"		30
Bald Eagle	1	1/8	2	1/8-15	1	1/13		2
Prairie Falcon	1	1/1	10	3/18-25	Still	Present		20
Osprey	1	4/12	1	4/12	1	4/12		1

Reported by O. E. Larochelle

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INT.-DUP. SEC., WASH., D.C.

36104

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Ruby Lake Months of January to April, 19 66

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse	Upland sage, rabbit-brush & meadows 20,000 acres	100							200	Residents On & Off use
California Valley Quail	Mountain drainages 225 acres	3							75	Resident populations occurring from transplants
Chukar Partridge	Mountain foothills 8000 acres	160							50	Resident populations occurring from transplants
Gray Partridge	Mountain Foothills 8000 acres	160							50	Resident populations occurring from transplants

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1754
Form NR-4
(June 1945)

SMALL MAMMALS

Refuge Ruby Lake Year ending April 30, 1966

(1) * Species	(2) Density			(3) Removals					(4) Disposition of Furs						(5)
									Share Trapping						
Common Name	Cover Types & Total Acreage of Habitat		Acres Per Animal	Hunting	Fur Harvest	Predator Control *	For Re-stocking	For Re-search	Permit Number	Trappers Share	Refuge share	Total Refuge Furs Shipped	Furs Donated	Furs Destroyed	Total Popula-tion
Mink	Marsh edges	2,000	200		2										10
Badger	Upland	27,000	2,700												10
Coyote	Upland & Marsh	36,000	1,440												25
Bobcat	Upland	27,000	1,800												15
Muskrat	Marsh	12,000	0.5		6036				T-6639* T-6640* T-6641*	4683	1353	1353	0	0	25,000

* List removals by Predator Animal Hunter

REMARKS: *All three Trapper permits are combined in total furs.

Reported by O. E. Larochelle

INSTRUCTIONS

Form NR-4 - SMALL MAMMALS (Include data on all species of importance in the management program; i. e., muskrats, beaver, coon, mink, coyote. Data on small rodents may be omitted except for estimated total population of each species considered in control operations.)

(1) SPECIES: Use correct common name. Example: Striped skunk, spotted skunk, short-tailed weasel, gray squirrel, fox squirrel, white-tailed jackrabbit, etc. (Accepted common names in current use are found in the "Field Book of North American Mammals" by H. E. Anthony and the "Manual of the Vertebrate Animals of the Northeastern United States" by David Starr Jordan.)

(2) DENSITY: Applies particularly to those species considered in removal programs. Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottom land hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) REMOVALS: Indicate the total number under each category removed since April 30 of the previous year, including any taken on the refuge by Service Predatory Animal Hunter. Also show any removals not falling under headingslisted.

(4) DISPOSITION OF FUR: On share-trapped furs list the permit number, trapper's share, and refuge share. Indicate the number of pelts shipped to market, including furs taken by Service personnel. Total number of pelts of each species destroyed because of unprimeness or damaged condition, and furs donated to institutions or other agencies should be shown in the column provided.

(5) TOTAL POPULATION: Estimated total population of each species reported on as of April 30.

REMARKS: Indicate inventory method(s) used, size of sample area(s), introductions, and any other pertinent information not specifically requested.

32715

3-1750.
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Ruby Lake MONTHS OF May TO August, 19 66

(1) Species	(2) Weeks of reporting period: 5/1-7 1	5/8-14 2	5/15-21 3	5/22-28 4	5/29-6/4 5	6/5-11 6	6/12-18 7	6/19-25 8	6/26-7/2 9	7/3-9 10
Swans:										
Whistling										
Trumpeter	14	14	14	14	14	14	14	14	14	14
Geese:										
Canada	250	250	250	250	250	250	250	250	250	400
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	800	800	800	800	800	800	800	800	700	750
Black										
Gadwall	300	300	300	300	300	300	300	300	300	300
Baldpate	200	50	50	50	75	75	75	75	75	75
Pintail	250	200	200	200	200	200	200	200	200	200
Green-winged teal	125	50	50	50	50	50	50	50	50	50
Blue-winged teal	25	50	50	50	50	50	50	50	50	50
Cinnamon teal	300	600	600	600	600	600	600	650	650	650
Shoveler	200	200	200	200	200	200	200	200	200	200
Wood										
Redhead	900	900	900	900	900	900	900	900	900	900
Ring-necked	50	100	100	100	100	100	100	100	100	100
Canvasback	800	600	600	600	600	600	600	600	600	600
Scaup, Lesser	275	200	200	200	200	200	200	200	200	200
Goldeneye	25									
Bufflehead	25	10	10	10	10	10	10	10	10	10
Ruddy	200	200	200	200	200	200	200	200	200	200
Other Comm. Merganser					10	10	10	10	10	10
Red b. Merganser	10									
TOTAL DUCKS	4,485	4,260	4,260	4,260	4,295	4,295	4,295	4,345	4,245	4,295
Coot:	9,500	10,000	10,000	10,000	11,000	11,500	11,750	11,750	11,750	11,750

Int. Dup. Sec.,
Wash., D. C. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Ruby Lake MONTHS OF May TO August, 19 66

(1) Species	(2) Weeks of reporting period: 7/10-16 (11)	7/17-23 (12)	7/24-30 (13)	7/31-8/6 (14)	8/7-13 (15)	8/14-20 (16)	8/21-27 (17)	8/28-9/3 (18)	(3) Estimated waterfowl days use	(4) Production: Broods seen	Estimated total
Swans:		Aerial					Aerial				
Whistling											
Trumpeter	14	14	23	23	23	23	21	21	2,114	3	9
Geese:											
Canada	400	400	400	400	400	400	400	400	40,950	67	390
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	750	1,200	2,200	2,250	2,300	2,500	2,200	2,200	164,150	88	1,160
Black											
Gadwall	300	500	900	900	1,000	1,200	600	600	63,000	70	540
Baldpate	75	150	200	225	300	500	400	400	21,350	5	60
Pintail	200	3,500	7,200	7,200	7,200	6,500	4,000	4,000	292,950	6	70
Green-winged teal	50	150	225	225	250	400	1,700	1,700	36,925		
Blue-winged teal	50	25	25	25	25	25	25	25	4,900	4	50
Cinnamon teal	550	1,000	1,900	1,900	1,500	1,700	1,000	1,000	114,800	149	1,290
Shoveler	200	200	200	250	300	350	250	250	28,000	9	175
Wood		25	25	25	25	25	25	25	1,225		
Redhead	900	900	900	900	1,000	1,200	900	900	116,200	87	1,170
Ring-necked	100	100	100	100	125	150	150	150	13,475	13	240
Canvasback	600	400	300	300	500	750	600	600	71,750	33	850
Scaup, Lesser	200	200	200	200	225	250	200	200	26,250	42	530
Goldeneye									175		
Bufflehead	10	25	25	25	25	25	25	25	2,100		
Ruddy	200	250	250	250	300	400	200	200	28,350	33	280
Other Comm. Merganser	10	10	10	10	10	10			840		
Red b. Merganser									70		
TOTAL DUCKS	4,195	8,635	14,660	14,785	15,085	15,985	12,275	12,275	986,510		
Coot:	11,750	11,000	11,000	11,250	11,500	12,500	16,000	16,000	1,470,000	400	8,000

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	2,114	23	9
Geese	40,950	400	390
Ducks	986,510	15,985	6,415
Coots	1,470,000	16,000	8,000

SUMMARY

Principal feeding areas Refuge marsh areas, grain fields and meadows.

Principal nesting areas Refuge dikes, marsh edges and islands.

Reported by O. E. Larochelle, Ass't Mgr.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ruby Lake Months of May to August 1966

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	10	7/4	80	7/6	Still	Present	0	0	0	125
Pied-billed Grebe	Previous	Period	120	7/1	"	"	1	50	125	225
White Pelican	5	7/20	5	7/20	5	7/20	0	0	0	5
White-faced Ibis	Previous	Period	175	7/13	Still	Present	0	20	30	200
American Bittern	Permanent	Resident	40	6/14	"	"	0	0	0	70
Great Blue Heron	"	"	60	6/22	"	"	0	0	0	75
Snowy Egret	Previous	Period	90	7/6	"	"	0	30	50	150
Black-crowned Night Heron	"	"	50	7/13	"	"	0	0	0	120
Sandhill Crane	"	"	50	7/13	"	"	0	20	30	60
II. Shorebirds, Gulls and Terns:										
California Gull	Previous	Period	40	8/30	Still	Present	0	0	0	75
Ring-billed Gull	12	8/10	20	8/30	"	"	0	0	0	50
Forster's Tern	Previous	Period	50	6/29	"	"	0	0	0	100
Black Tern	2	6/12	25	6/29	"	"	0	0	0	50
American Avocet	Previous	Period	800	7/20	"	"	0	40	100	1,200
Black-necked Stilt	5	7/4	100	7/20	"	"	0	0	0	300
Common Snipe	Permanent	Resident	50	6/22	"	"	0	0	0	100
Lesser Yellowlegs	Previous	Period	100	7/27	"	"	0	0	0	150
Western Willet	"	"	50	7/13	"	"	0	50	110	100
Spotted Sandpiper	"	"	75	7/13	"	"	0	30	75	125
Long-billed Curlew	"	"	110	7/13	"	"	2	60	100	200
Killdeer	"	"	175	7/20	"	"	0	60	130	400

(over)

(1)	(2)		(3)		(4)		(5)			(6)
III. Doves and Pigeons:										
Mourning dove	Previous	Period	1,500	7/20	Still	Present	0	150	325	4,000
White-winged dove										
IV. Predaceous Birds:										
Golden eagle	Permanent	Resident	3	6/25	"	"	0	0	0	10
Duck hawk										
Horned owl	"	"	20	8/13	"	"	0	0	0	30
Magpie	"	"	200	8/20	"	"	7	100	300	450
Raven	"	"	20	8/20	"	"	0	10	40	130
Crow	Previous	Period	300	6/18	"	"	0	30	120	400
Turkey Vulture	"	"	80	8/31	"	"	0	0	0	100
Marsh Hawk	Permanent	Resident	50	8/17	"	"	0	0	0	200
Cooper's Hawk	"	"	10	7/13	"	"	0	0	0	40
Red-tailed Hawk	"	"	5	8/24	"	"	0	0	0	20
Rough-legged Hawk	"	"	20	8/10	"	"	0	0	0	50
Bald Eagle	Previous	Period	2	5/6	"	"	0	0	0	10
Prairie Falcon	Permanent	Resident	5	8/28	"	"	0	0	0	25
Osprey	Previous	Period	1	8/30	"	"	0	0	0	5

Reported by O. E. Larochelle

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750b
Form NR-1B
(Rev. Nov. 1957)

UNITED STATES
DEPARTMENT OF THE INTERIOR
FISH AND WILDLIFE SERVICE
BUREAU OF SPORT FISHERIES AND WILDLIFE

WATERFOWL UTILIZATION OF REFUGE HABITAT

Refuge Ruby Lake For 12-month period ending August 31, 19 66

Reported by Donald Lewis Title Refuge Manager

(1) Area or Unit Designation	(2) Habitat Type	(2) Habitat Acreage	(3) Use-days	(4) Breeding Population	(5) Production
North Sump I	Crops	0	Ducks 175,000	500	280
	Upland	10,000	Geese 6,000	10	20
	Marsh	4,000	Swans 1,000	0	0
	Water	0*	Coots 180,000	200	100
	Total	14,000	Total 362,000	710	400
Developed Units II	Crops	45	Ducks 1,176,000	4,300	3,200
	Upland	3,000	Geese 44,560	110	260
	Marsh	2,700	Swans 4,200	10	8
	Water	0*	Coots 1,280,000	3,800	2,500
	Total	5,745	Total 2,504,760	8,220	5,968
South Sump III	Crops	40	Ducks 1,240,225	3,800	2,935
	Upland	8,006	Geese 27,000	80	110
	Marsh	9,400	Swans 1,079	4	1
	Water	0*	Coots 2,240,200	7,000	5,400
	Total	17,446	Total 3,508,504	10,884	8,446
Total	Crops	85	Ducks 2,591,225	8,600	6,415
	Upland	21,006	Geese 77,560	200	390
	Marsh	16,100	Swans 6,279	14	9
	Water	0*	Coots 3,700,200	11,000	8,000
	Total	37,191	Total 6,375,264	19,814	14,814
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
*All water areas included in Marshland	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		
	Crops		Ducks		
	Upland		Geese		
	Marsh		Swans		
	Water		Coots		
	Total		Total		

(over)

INSTRUCTIONS

All tabulated information should be based on the best available techniques for obtaining these data. Estimates having no foundation in fact must be omitted. Refuge grand totals for all categories should be provided in the spaces below the last unit tabulation. Additional forms should be used if the number of units reported upon exceeds the capacity of one page. This report embraces the preceding 12-month period, NOT the fiscal or calendar year, and is submitted annually with the May-August Narrative Report.

(1) **Area or Unit:** A geographical unit which, because of size, terrain characteristics, habitat type and current or anticipated management practices, may be considered an entity apart from other areas in the refuge census pattern. The combined estimated acreages of all units should equal the total refuge area. A detailed map and accompanying verbal description of the habitat types of each unit should be forwarded with the initial report for each refuge, and thereafter need only be submitted to report changes in unit boundaries or their descriptions.

(2) **Habitat:** Crops include all cultivated croplands such as cereals and green forage, planted food patches and agricultural row crops; upland is all uncultivated terrain lying above the plant communities requiring seasonal submergence or a completely saturated soil condition a part of each year, and includes lands whose temporary flooding facilitates use of non-aquatic type foods; marsh extends from the upland community to, but not including, the water type and consists of the relatively stable marginal or shallow-growing emergent vegetation type, including wet meadow and deep marsh; and in the water category are all other water areas inundated most or all of the growing season and extending from the deeper edge of the marsh zone to strictly open-water, embracing such habitat as shallow playa lakes, deep lakes and reservoirs, true shrub and tree swamps, open flowing water and maritime bays, sounds and estuaries. Acreage estimates for all four types should be computed and kept as accurate as possible through reference to available maps supplemented by periodic field observations. The sum of these estimates should equal the area of the entire unit.

(3) **Use-days:** Use-days is computed by multiplying weekly waterfowl population figures by seven, and should agree with information reported on Form NR-1.

(4) **Breeding Population:** An estimate of the total breeding population of each category of birds for each area or unit.

(5) **Production:** Estimated total number of young raised to flight age.

Interior Duplicating Section, Washington, D. C. 27580

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Ruby Lake Months of May to August, 19 66

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse	Upland sage, rabbit-brush & meadows 20,000 acres	150	8	125	100:200	0	0	0	225	Residents On & Off use
California Valley Quail	Foothill drainages 225 acres	2	12	120	100:100	0	0	0	80	Resident populations occurring from transplants
Chukar Partridge	Mountain foothills 8000 acres	80	4	100	100:100	0	0	0	75	Resident populations occurring from transplants
Gray Partridge	Mountain Foothills 8000 acres	110	1	75	100:100	0	0	0	50	Resident populations occurring from transplants

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1750
Form NR-1
(Rev. March 1953)

WATERFOWL

REFUGE Ruby Lake MONTHS OF September TO December, 1966

(1) Species	(2) Weeks of reporting period 9/4-10 1	9/11-17 2	9/18-24 3	9/25-10/1 4	10/2-8 5	10/9-15 6	10/16-22 7	10/23-29 8	10/30-11/5 9	11/6-12 10
Swans:	Aerial									
Whistling									65	200
Trumpeter	21	21	20	20	20	20	22	22	22	22
Geese:										
Canada	400	400	400	425	425	325	325	275	275	225
Cackling										
Brant										
White-fronted										
Snow										
Blue										
Other										
Ducks:										
Mallard	1,800	2,000	2,400	2,500	2,500	2,500	3,000	2,500	2,500	1,500
Black										
Gadwall	1,100	1,100	900	1,000	1,000	1,000	1,000	1,000	1,000	600
Baldpate	300	300	300	400	600	600	900	1,000	1,200	750
Pintail	3,000	3,800	3,000	3,000	3,000	3,000	3,000	2,500	2,000	1,100
Green-winged teal	900	1,000	900	900	1,000	1,000	1,000	750	500	500
Blue-winged teal	25	50	50	150	125	125	125	10	10	
Cinnamon teal	600	900	1,200	1,100	1,000	1,000	1,000	500	100	25
Shoveler	400	400	400	400	400	400	600	600	500	300
Wood	25	25	25	25	25	25	25	25	25	25
Redhead	2,600	2,800	2,800	3,000	3,000	3,000	3,000	3,000	3,000	1,500
Ring-necked	100	200	200	200	200	300	300	400	400	500
Canvasback	900	1,000	1,200	1,200	1,200	1,200	1,500	1,500	1,500	1,000
Scaup, Lesser	100	200	200	200	200	250	300	400	500	500
Goldeneye									75	300
Bufflehead	25	25	50	50	100	200	300	500	500	750
Ruddy	150	200	300	300	300	300	500	750	750	1,000
OtherComm. Merganser										
Red b. Merganser										
TOTAL DUCKS	12,025	14,000	13,925	14,425	14,650	14,900	16,550	15,435	14,560	10,350
Coot:	16,000	17,000	18,000	18,000	18,000	18,000	20,000	20,000	20,000	15,000

Int. Dup. Sec.,
Wash., D. C. 37944

3 -1750a
Cont. NR-1
(Rev. March 1953)

WATERFOWL
(Continuation Sheet)

REFUGE Ruby Lake MONTHS OF September TO December, 1966

(1) Species	(2) Weeks of reporting period 11/13-19	11/20-1226	11/27-13 3	12/4-10	12/11-17	12/18-24	12/25-31	18	(3) Estimated waterfowl days use	(4) Production Broods seen	(4) Production Estimated total
Swans:											
Whistling	600	450	350	50	50	10	10		12,495		
Trumpeter	22	22	22	22	22	22	22		2,548		
Geese:											
Canada	175	100	100	50	50	10	10		27,790		
Cackling											
Brant											
White-fronted											
Snow											
Blue											
Other											
Ducks:											
Mallard	1,500	750	750	300	250	200	200		190,050		
Black											
Gadwall	1,000	650	650	200	150	125	100		88,025		
Baldpate	900	500	500	225	125	100	75		61,425		
Pintail	1,000	500	500	125	75	75	75		208,250		
Green-winged teal	350	250	250	50	25	25	25		65,975		
Blue-winged teal									4,690		
Cinnamon teal									51,975		
Shoveler	300	300	300	100	25	25	25		38,325		
Wood	25	25	25						2,275		
Redhead	1,500	900	800	350	125	100	75		220,850		
Ring-necked	500	300	300	300	200	200	200		33,600		
Canvasback	1,000	500	500	100	25	25	25		100,625		
Scaup, Lesser	600	600	600	300	250	250	200		39,550		
Goldeneye	500	500	500	250	250	250	250		20,125		
Bufflehead	1,000	750	750	200	150	150	150		39,550		
Ruddy	750	750	750	250	250	250	200		54,250		
Other Comm. Merganser			10						70		
Red b. Merganser		10	10	10					210		
TOTAL DUCKS	10,925	7,285	7,195	2,760	1,900	1,775	1,600		1,219,820		
	12,000	8,000	8,000	2,000	1,000	750	500		1,485,750		
Coot:											

(over)

	(5) Total Days Use	(6) Peak Number	(7) Total Production
Swans	15,043	622	
Geese	27,790	425	
Ducks	1,219,820	16,550	
Coots	1,485,750	20,000	

SUMMARY

Principal feeding areas Refuge grain fields, collection ditch, developed and undeveloped marsh.

Principal nesting areas

Reported by O. E. Larochelle, Ass't Mgr.

INSTRUCTIONS (See Secs. 7531 through 7534, Wildlife Refuges Field Manual)

(1) Species: In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and national significance.

(2) Weeks of Reporting Period: Estimated average refuge populations.

(3) Estimated Waterfowl Days Use: Average weekly populations x number of days present for each species.

(4) Production: Estimated number of young produced based on observations and actual counts on representative breeding areas. Brood counts should be made on two or more areas aggregating 10% of the breeding habitat. Estimates having no basis in fact should be omitted.

(5) Total Days Use: A summary of data recorded under (3).

(6) Peak Number: Maximum number of waterfowl present on refuge during any census of reporting period.

(7) Total Production: A summary of data recorded under (4).

Interior Duplicating Section, Washington, D. C.
1953

3-1751
Form NR-1A
(Nov. 1945)

MIGRATORY BIRDS
(other than waterfowl)

Refuge Ruby Lake Months of September to December 1966

(1) Species	(2) First Seen		(3) Peak Numbers		(4) Last Seen		(5) Production			(6) Total
Common Name	Number	Date	Number	Date	Number	Date	Number Colonies	Total # Nests	Total Young	Estimated Number
I. Water and Marsh Birds:										
Eared Grebe	Previous	Period	60	9/12	Still	Present				
Western Grebe	2	11/13	2	11/13	1	11/27				
Pied-billed Grebe	Previous	Period	40	10/26	Still	Present				
White Pelican	"	"	10	10/26	10	10/26				
White-faced Ibis	"	"	125	9/12	15	11/4				
Great Blue Heron	Permanent	Resident	75	9/12	Still	Present				
Snowy Egret	Previous	Period	100	9/26	2	11/1				
Black-crowned Night Heron	"	"	75	9/26	1	12/22				
American Bittern	Permanent	Resident	100	10/18	Still	Present				
Sandhill Crane	Previous	Period	50	9/19	10	10/9				
II. Shorebirds, Gulls and Terns:										
Killdeer	Previous	Period	75	9/19	8	12/28				
Common Snipe	Permanent	Resident	50	10/15	Still	Present				
Long-billed Curlew	Previous	Period	90	9/26	10	10/22				
Spotted Sandpiper	"	"	15	9/5	4	10/29				
Western Willet	"	"	25	9/12	6	10/29				
Lesser Yellowlegs	"	"	35	9/2	5	10/29				
American Avocet	"	"	600	9/12	10	10/20				
Black-necked Stilt	"	"	40	9/2	2	9/26				
California Gull	"	"	10	9/2	1	10/31				
Ring-billed Gull	"	"	10	9/25	1	10/14				
Forster's Tern	"	"	30	9/2	2	10/5				
Black Tern	"	"	10	9/9	1	9/26				

(over)

(1)	(2)		(3)		(4)		(5)	(6)
III. Doves and Pigeons:								
Mourning dove	Previous	Period	750	9/1	1	12/15		
White-winged dove								
IV. Predaceous Birds:								
Golden eagle	Permanent	Resident	3	12/10	Still	Present		
Duck hawk	"	"	20	9/1	"	"		
Horned owl	"	"	200	9/1	"	"		
Magpie	"	"	20	9/1	"	"		
Raven	Previous	Period	300	9/1	10	11/27		
Crow	"	"	80	9/1	25	10/7		
Turkey Vulture	Permanent	Resident	8	9/8	Still	Present		
Cooper's Hawk	"	"	5	9/1	"	"		
Red-tailed Hawk	"	"	20	9/1	"	"		
Rough-legged Hawk	Previous	Period	1	12/17	"	"		
Bald Eagle	Permanent	Resident	45	9/8	"	"		
Marsh Hawk	"	"	7	11/13	"	"		
Prairie Falcon								

Reported by O. E. Larochelle, Ass't Mgr.

INSTRUCTIONS

(1) Species: Use the correct names as found in the A.O.U. Checklist, 1931 Edition, and list group in A.O.U. order. Avoid general terms as "seagull", "tern", etc. In addition to the birds listed on form, other species occurring on refuge during the reporting period should be added in appropriate spaces. Special attention should be given to those species of local and National significance. Groups: I. Water and Marsh Birds (Gaviiformes to Ciconiiformes and Gruiiformes)
II. Shorebirds, Gulls and Terns (Charadriiformes)
III. Doves and Pigeons (Columbiformes)
IV. Predaceous Birds (Falconiformes, Strigiformes and predaceous Passeriformes)

(2) First Seen: The first refuge record for the species for the season concerned.

(3) Peak Numbers: The greatest number of the species present in a limited interval of time.

(4) Last Seen: The last refuge record for the species during the season concerned.

(5) Production: Estimated number of young produced based on observations and actual counts.

(6) Total: Estimated total number of the species using the refuge during the period concerned.

INTERIOR--PORTLAND, OREGON

3-1750c
Form NR-1C
(Sept. 1960)

WATERFOWL HUNTER KILL SURV

Refuge Ruby Lake

Year 1966

(1) Weeks of Hunting	(2) No. Hunters Checked	(3) Hunter Hours	(4) Waterfowl Species and Nos. of Each Bagged	(5) Total Bagged	(6) Crippling Loss	(7) Total Kill	(8) Est. No. of Hunters	(9) Est. Total Kill
10/15-21	38	960	Redhead 69, Canvasback 17, Mallard 11, Pintail 9, Ruddy 4, Baldpate 2, Bufflehead 2, Shoveler 1, Gadwall 1, Cinnamon Teal 1, Lesser Scaup 1	118	15	133	240	840
10/22-28	9	140	Redhead 4, Mallard 1, Pintail 1, Gadwall 1, Bufflehead 1, Ruddy 1	9	2	11	35	43
10/29-11/4	2	160	Redhead 5, Lesser Scaup 1	6	1	7	40	140
11/5-11	6	180	Mallard 10, Redhead 3, Gadwall 2, Canvasback 2, Coot 2, Wood duck 1	20	3	23	45	172
11/12-18	4	152	Mallard 9, Pintail 2, Green-winged Teal 1, Goldeneye 1	13	0	13	38	124
11/19-25	6	140	Mallard 12, Pintail 5, Widgeon 1, Coot 1,	19	0	19	35	111
11/26-12/2	4	40	Mallard 6, Widgeon 1, Shoveler 1	8	2	10	10	25
12/3-9	4	140	Mallard 6, Pintail 2, Green-winged Teal 1	9	1	10	35	87
12/10-16	2	100	Mallard 5, Widgeon 2, Gadwall 2, Goldeneye 1	10	0	10	25	125
12/17-23	4	176	Mallard 3, Lesser Scaup 3, Goldeneye 3	9	0	9	44	99
12/24-30	3	92	Lesser Scaup 8, Mallard 1, Ruddy 1	10	0	10	23	76
12/31-1/6	2	40	None	0	2	2	10	10
1/7-8	2	80	None	0	3	3	20	30
	86	2,400		231	29	260	600	1,882

Waterfowl season:
October 15, 1966-January 8, 1967

(over)

INSTRUCTIONS

(1) The first week of hunting begins with opening day and ends at the close of hunting 6 days later. Successive weeks follow the same pattern.

(2) The goal is to survey a minimum of 25 percent of refuge hunters each week and to record data only from those who have completed their day's hunting. This information should be collected during each day of the week and in each area hunted in relative proportion to the hunter effort expended. When the 25 percent goal cannot be achieved, particular care should be taken to collect representative data.

(3) Record the total number of hours the hunters spent hunting on the refuge.

(4) List waterfowl species in decreasing order of numbers bagged. Sample entry: Mallard (61), Pintail (36), Redhead (16), Gadwall (11), Widgeon (6), Coot (4), Canada Goose (3), Green-winged Teal (1).

(5) Record total numbers of waterfowl bagged.

(6) Record total numbers of waterfowl reported knocked down but not recovered.

(7) Total of Columns 5 and 6.

(8) Estimate the total number of hunters who hunted on the refuge during the week, including hunters checked (Column 2).

(9) Kill sample projected to 100 percent. Column 9 = $\frac{\text{Column 8}}{\text{Column 2}}$ x Column 7.

3-1752
Form NR-2
(April 1946)

UPLAND GAME BIRDS

Refuge Ruby Lake Months of September to December, 19 66

(1) Species	(2) Density		(3) Young Produced		(4) Sex Ratio	(5) Removals			(6) Total	(7) Remarks
Common Name	Cover types, total acreage of habitat	Acres per Bird	Number broods obs'v'd.	Estimated Total	Percentage	Hunting	For Re-stocking	For Research	Estimated number using Refuge	Pertinent information not specifically requested. List introductions here.
Sage Grouse	Upland sage, rabbitbrush and Meadows 20,000 acres	80	5	20	1::1	0			225	Residents on and off use
California Valley Quail	Foothill drainages 225 acres	3	3	27	1::1	0			80	Resident population resulting from transplants
Chukar Partridge	Mountain foothills 8,000 acres	100			1::1	0			80	Resident population resulting from transplants
Gray Partridge	Mountain foothills 8,000 acres	160			1::1	0			50	Resident population resulting from transplants

INSTRUCTIONS

Form NR-2 - UPLAND GAME BIRDS.*

(1) SPECIES: Use correct common name.

(2) DENSITY: Applies particularly to those species considered in removal programs (public hunts, etc.). Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge; once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated number of young produced, based upon observations and actual counts in representative breeding habitat.

(4) SEX RATIO: This column applies primarily to wild turkey, pheasants, etc. Include data on other species if available.

(5) REMOVALS: Indicate total number in each category removed during the report period.

(6) TOTAL: Estimated total number using the refuge during the report period. This may include resident birds plus those migrating into the refuge during certain seasons.

(7) REMARKS: Indicate method used to determine population and area covered in survey. Also include other pertinent information not specifically requested.

* Only columns applicable to the period covered should be used.

3-1753
Form NR-3
(June 1945)

BIG GAME

Refuge Ruby Lake Calendar Year 1966

(1) Species	(2) Density	(3) Young Produced	(4) Removals				(5) Losses			(6) Introductions		(7) Estimated Total Refuge Population		(8) Sex Ratio
Common Name	Cover types, total Acreage of Habitat	Number	Hunting	For Re-stocking	Sold	For Research	Predation	Disease	Winter Loss	Number	Source	At period of Greatest use	As of Dec. 31	
Mule deer	Upland sage, rabbitbrush and meadows 27,000 acres	10	0	0	0	0	0	0	0	0		1,000*	400	1 buck:: 4 does

*migrating and wintering animals

Remarks:

Reported by O. E. Larochelle, Ass't Mgr.

INSTRUCTIONS

Form NR-3 - BIG GAME

(1) SPECIES: Use correct common name; i.e., Mule deer, black-tailed deer, white-tailed deer. It is unnecessary to indicate sub-species such as northern or Louisiana white-tailed deer.

(2) DENSITY: Detailed data may be omitted for species occurring in limited numbers. Density to be expressed in acres per animal by cover types. This information is to be prefaced by a statement from the refuge manager as to the number of acres in each cover type found on the refuge: once submitted, this information need not be repeated except as significant changes occur in the area of cover types. Cover types should be detailed enough to furnish the desired information but not so much as to obscure the general picture. Examples: spruce swamp, upland hardwoods, reverting agriculture land, bottomland hardwoods, short grass prairie, etc. Standard type symbols listed in Wildlife Management Series No. 7 should be used where possible. Figures submitted should be based on actual observations and counts on representative sample areas. Survey method used and size of sample area or areas should be indicated under Remarks.

(3) YOUNG PRODUCED: Estimated total number of young produced on refuge.

(4) REMOVALS: Indicate total number in each category removed during the year.

(5) LOSSES: On the basis of known records or reliable estimates indicate total losses in each category during the year.

(6) INTRODUCTIONS: Indicate the number and refuge or agency from which stock was secured.

(7) TOTAL REFUGE POPULATION: Give the estimated population of <u>each</u> <u>species</u> on the refuge at period of its greatest abundance and also as of Dec. 31.

(8) SEX RATIO: Indicate the percentage of males and females of each species as determined from field observations or through removals.

3-1755
Form NR-5

DISEASE

Refuge Ruby Lake Year 1966

Botulism None

Lead Poisoning or other Disease None

Period of outbreak _____

Period of heaviest losses _____

Losses:

	Actual Count	Estimated
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Number Hospitalized	No. Recovered	% Recovered
(a) Waterfowl		
(b) Shorebirds		
(c) Other		

Areas affected (location and approximate acreage) _____

Water conditions (average depth of water in sickness areas, reflooding of exposed flats, etc.

Condition of vegetation and invertebrate life _____

Remarks _____

Kind of disease _____

Species affected _____

Number Affected Species	Actual Count	Estimated

Number Recovered _____

Number lost _____

Source of infection _____

Water conditions _____

Food conditions _____

Remarks _____

INT.-DUP., D.C.- 53818-59

NR-6 Bureau of Sport Fisheries and Wildlife

PUBLIC RELATIONS

(See Instructions on Reverse Side)

Refuge Ruby Lake Calendar Year 1966

1. Visits

a. Hunting 600 b. Fishing 25,000 c. Miscellaneous 6,000 d. TOTAL VISITS 31,600

1a. Hunting (on refuge lands)

TYPE	HUNTERS	ACRES	MANAGED BY
Waterfowl	600	9,000	Refuge
Upland Game			
Big Game			
Other			

Number of permanent blinds 0

Man-days of bow hunting included above 0

Estimated man-days of hunting on lands adjacent to refuge 4,500

1b. Fishing (area open to fishing on refuge lands)

TYPE OF AREA	ACRES	MILES
Ponds or Lakes	10,000	
Streams and Shores		1

1c. Miscellaneous Visits

Recreation 5,300 Official 400

Economic Use 300 Industrial 0

2. Refuge Participation (groups)

TYPE OF ORGANIZATION	ON REFUGE		OFF REFUGE	
	NO. OF GROUPS	NUMBER IN GROUPS	NO. OF GROUPS	NUMBER IN GROUPS
Sportsmen Clubs	4	72	12	250
Bird and Garden Clubs	2	18		
Schools	8	280	8	240
Service Clubs				
Youth Groups	4	240	3	125
Professional-Scientific	20	100	2	100
Religious Groups				
State or Federal Govt.	25	150	10	200
Other				

3. Other Activities

TYPE	NUMBER	TYPE	NUMBER
Press Releases	40	Radio Presentations	1
Newspapers (P.R.'s sent to)	15	Exhibits	0
TV Presentations	0	Est. Exhibit Viewers	0

3-1756
(Rev. 4/63)

INSTRUCTIONS

Item 1: Total of a, b, and c, equal d.

"Visit" - definition. Any person who is on refuge lands or waters during a day or part thereof for the purpose of: hunting, fishing, bird-watching, recreation, business or economic use, official visit, or similar interest. INCLUDE - those who stop within the refuge while traveling on a public highway because of an interest in the area. EXCLUDE - persons engaged in oil or other industry not directly related to the refuge, persons using refuge as most direct route or principal avenue of traffic, and those boating on navigable rivers or the Intercoastal Canal, unless they stop to observe wildlife on the refuge.

Computing visits. Where actual counts are impractical, "sampling" is used with midweek and weekend samples varied by season or weather. A conversion factor of 3.5 (of passengers per car) is used when accurate figures are not available. Each refuge will develop a conversion factor for boats based on range of usage. Count a camper once for each 24-hour period or fraction thereof.

Item 1a: Acres - of refuge open for each type of hunting.

Managed hunts require check in and out of hunters, issuance of permits, or assignment of blinds.

Other - INCLUDE crow, fox, and similar hunting.

Lands adjacent to refuge. Normally considered within 1 mile or less of boundary, unless established sampling procedures cover a wider area. For big game hunting, the distance may be greater.

Item 1b: Acres of streams open to fishing, if practical; otherwise just miles open. Information on "shores" is primarily for coastal fishing.

Item 1c: Recreation. INCLUDE photography, observing wildlife, picnicking, swimming, boating, camping, visitor center use, tours, etc. TOTAL Recreation, Official, and Economic Use visits under Item 1.

Industrial. INCLUDE persons engaged in industry, i.e., oil industry or factories. EXCLUDE these from Item 1.

Item 2: INCLUDE the "On Refuge" groups in Items 1c and 1. In "Off Refuge" column include only those group meetings in which refuge employees actually participate. EXCLUDE these from Items 1c and 1.

Item 3: Exhibits - INCLUDE displays, fairs, parades, and exhibits OFF the refuge; EXCLUDE those ON.

INTERIOR--PORTLAND, OREGON

3-1757
Form NR-7
(Rev. June 1960)

(1)

NONAGRIC TURAL COLLECTIONS, RECEIPTS, AN PLANTINGS

Refuge Ruby Lake Year 19 66

Species	Collections and Receipts (Seeds, rootstocks, trees, shrubs)						Plantings (Marsh - Aquatic - Upland)						
	Amount (Lbs., bus., etc.)	(2) C or R	Date	Method or Source	Cost	(3) Total Amount on Hand	Location of Area Planted	Rate of Seeding or Planting	Amount Planted (Acres or Yards of Shoreline)	Amount and Nature of Propagules	Date	Survival	Cause of Loss
Am. Plum							Headquarters area	6' apart in 75' rows		50 small trees	4/25-29	99%	Unk
Russian Olive							Headquarters area	5' apart in 75' rows		50 small trees	4/25-29	80%	Unk
Caragana							Headquarters area	2' apart in 75' rows		250 small shrubs	4/25-29	95%	Unk
Juniper							Headquarters area	1' apart in 50' row		50 small shrubs	4/25-29	80%	Unk
Chinese Elm							Headquarters area	scattered		5 small trees	4/25-29	100%	---
Boxelder								scattered		3 small trees	4/25-29	100%	---

(1) Report agronomic farm crops on Form NR-8
(2) C = Collections and R = Receipts
(3) Use "S" to denote surplus

Total acreage planted:
Marsh and aquatic _____
Hedgerows, cover patches _____
Food strips, food patches _____
Forest plantings _____

Remarks: All trees except Chinese elm and Boxelder were obtained from the Nevada State Department of Forestry for a windbreak planting on the west edge of the headquarters area.

INTERIOR--PORTLAND, OREGON

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and W[illegible]life Service Branch of Wild[illegible]e Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ruby Lake County Elko State Nevada

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
Common rye	0	0	0	0	85	1,900 Bu. 1,200 Lb.	85	Green browse, hay and rye	85
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations 7

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	1,074	4,133.56	$6,200.39	18,100
				2. Other Horses	55	281.24	564.48	18,100
				1. Total Refuge Acreage Under Cultivation				85
Hay - Wild				2. Acreage Cultivated as Service Operation				85

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C. 91767

3-1758
Form NR-8
(Rev. Jan. 1956)

Fish and W..ilife Service Branch of Wild..e Refuges

CULTIVATED CROPS - HAYING - GRAZING

Refuge Ruby Lake County White Pine State Nevada

Cultivated Crops Grown	Permittee's Share Harvested		Government's Share or Return				Total Acreage Planted	Green Manure, Cover and Water-fowl Browsing Crops Type and Kind	Total Acreage
			Harvested		Unharvested				
	Acres	Bu./Tons	Acres	Bu./Tons	Acres	Bu./Tons			
NONE									
								Fallow Ag. Land	

No. of Permittees: Agricultural Operations _____ Haying Operations _____ Grazing Operations 3

Hay - Improved (Specify Kind)	Tons Harvested	Acres	Cash Revenue	GRAZING	Number Animals	AUM'S	Cash Revenue	ACREAGE
				1. Cattle	531	2,276.82	$3,337.79	5,391
				2. Other Horses	11	62.30	124.60	5,391
				1. Total Refuge Acreage Under Cultivation				0
Hay - Wild				2. Acreage Cultivated as Service Operation				0

DIRECTIONS FOR PREPARING FORM NR-8
CULTIVATED CROPS - HAYING - GRAZING

Report Form NR-8 should be prepared on a calendar-year basis for all crops which were planted during the calendar year and for haying and grazing operations carried on during the same period.

Separate reports shall be furnished for Refuge lands in each county when a refuge is located in more than one county or State.

Cultivated Crops Grown - List all crops planted, grown and harvested on the refuge during the reporting period regardless of purpose. Crops in kind which have been planted by more than one permittee or this Service shall be combined for reporting purposes.

Permittee's Share - Only the number of acres utilized by the permittee for his own benefit should be shown under the Acres column, and only the number of bushels of farm crops harvested by the permittee for himself should be shown under the Bushels Harvested column. Report all crops harvested in bushels or fractions thereof except such crops as silage, watermelons, cotton, tobacco, and hay, which should be reported in tons or fractions thereof.

Government's Share or Return - Harvested - Show the acreage and number of bushels harvested for the Government of crops produced by permittees or refuge personnel. Unharvested - Show the exact acreage and the estimated number of bushels of grain available for wildlife. If grazing is made available to waterfowl through the planting of grain, cover, green manure, grazing or hay crops, estimate the tonnage of green food produced or utilized and report under Bushels Unharvested column.

Total Acreage Planted - Report all acreage planted, including crop failures.

Green Manure, Cover and Waterfowl Grazing Crops - Specify the acreage, kind and purpose of the crop. These crops and the acreage may be duplicated under cultivated crops if planted during the year, or a duplication may occur under hay if the crop results from a perennial planting.

Hay - Improved - List separately the kinds of improved hay grown. Annual plantings should also be reported under Cultivated Crops, and perennial hay should be listed in the same manner at time of planting.

Total Refuge Acreage Under Cultivation - Report total land area devoted to agricultural purposes during the year.

INT.-DUP. SEC., WASH., D.C.91767

3-1570
NR-89
(4/54)

REFUGE GRAIN REPORT

Refuge Ruby Lake Months of September through December, 1966

(1) Variety*	(2) On Hand Beginning of Period	(3) Received During Period	(4) Total	(5) Grain Disposed of				(6) On Hand End of Period	(7) Proposed or Suitable Use*		
				Transferred	Seeded	Fed	Total		Seed	Feed	Surplus
Common Rye	0	3 Bu.	3 Bu.	0	0	0	0	3 Bu.	3 Bu.	0	0
Crested Wheat	20 Bu.	0	20 Bu.	0	13	0	13	7 Bu.	7 Bu.	0	0
Wild Millet	0	19 Bu.	19 Bu.	0	0	0	0	19 Bu.	19 Bu.	0	0
Henchen Barley	100 Bu.	200 Bu.	300 Bu.	0	0	100	100	200 Bu.	0	200 Bu.	0
Roundstem Bulrush	0	4 Bu.	4 Bu.	0	0	0	0	4 Bu.	4 Bu.	0	0
Milo	0	36 Bu.	36 Bu.	0	0	11	11	25 Bu.	0	25 Bu.	0

(8) Indicate shipping or collection points Elko, Nevada

(9) Grain is stored at Headquarters granary

(10) Remarks

*See instructions on back.

NR-8a

REFUGE GRAIN REPORT

This report should cover all grain on hand, received, or disposed of, during the period covered by this narrative report.

Report all grain in bushels. For the purpose of this report the following approximate weights of grain shall be considered equivalent to a bushel: Corn (shelled)—55 lb., corn (ear)—70 lb., wheat—60 lb., barley—50 lb., rye—55 lb., oats—30 lb., soy beans—60 lb., millet—50 lb., cowpeas—60 lb., and mixed—50 lb. In computing volume of granaries, multiply the cubic contents (cu. ft.) by 0.8 bushels.

(1) List each type of grain separately and specifically, as flint corn, yellow dent corn, square deal hybrid corn, garnet wheat, red May wheat, durum wheat, spring wheat, proso millet, combine milo, new era cowpeas, mikado soy beans, etc. Mere listing as corn, wheat, and soybeans will not suffice, as specific details are necessary in considering transfer of seed supplies to other refuges. Include only domestic grains; aquatic and other seeds will be listed on NR–9.

(3) Report all grain received during period from all sources, such as transfer, share cropping, or harvest from food patches.

(4) A total of columns 2 and 3.

(6) Column 4 less column 5.

(7) This is a proposed break-down by varieties of grain listed in column 6. Indicate if grain is suitable for seeding new crops.

(8) Nearest railroad station for shipping and receiving.

(9) Where stored on refuge: "Headquarters granary," etc.

(10) Indicate here the source of grain shipped in, destination of grain transferred, data on condition of grain, unusual uses proposed.

INT.-DUP. SEC., WASH., D.C. 17065

3-1761
Form NR-11

TIMBER REMOVAL

Refuge Ruby Lake Year 1966

Permittee	Permit No.	Unit or Location	Acreage	No. of Units Expressed in B. F., ties, etc.	Rate of Charge	Total Income	Reservations and/or Diameter Limits	Species Cut
NONE								

Total acreage cut over.....

Total income.....

No. of units removed B. F.....

Cords.....

Ties.....

.....

Method of slash disposal.....

3-1979 (NR-12)
(9/63)

Bureau of Sport Fisheries and Wildlife

ANNUAL REPORT OF PESTICIDE APPLICATION

Refuge: Ruby Lake

Proposal Number: 3-66

Reporting Year: 1966

INSTRUCTIONS: Wildlife Refuges Manual, secs. 3252d, 3394b and 3395.

Date(s) of Application	List of Target Pest(s)	Location of Area Treated	Total Acres Treated	Chemical(s) Used	Total Amount of Chemical Applied	Application Rate	Carrier and Rate	Method of Application
(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)
6/13-15	Thistles, mustard and misc. broadleafs	Dike roadsides	300	2-4-D Amine	75 gals.	2 lbs. A.E./A	Water 100 gal/A	Bean Sprayer (26' Boom)

10. Summary of results (continue on reverse side, if necessary)

90% apparent kill on broadleafs.

INTERIOR--PORTLAND, OREGON

The boat landing is fully equipped providing protection from cattle, boat dock, launching ramp, parking area, picnic tables and comfort station. An added convenience to fishermen, boaters and water skiers would be the placement of an informational bulletin board at this location.

Landing mat was acquired through a cooperative agreement with Federal Aid. The Elko Sportsman's Club furnished the dock and floats. The area was fenced and graveled by refuge personnel.

Public use of the facility increased approximately 300%. Sixty-four boats were docked during the 4th of July weekend. Extremely dry conditions off the refuge and excellent large-mouth bass fishing caused the incline in visitation.

Controlling dense growth of hardstem bulrush is a constant battle. Twenty foot strips were plowed with a 4-bottom moldboard plow to create more open water areas.

For the second year, gosling pairs were transplanted to the Nevada State Sunnyside Management Area to establish a breeding flock. Twenty-three pair are at their new home with one year remaining in the program.

Complete remodeling of the Nevada State Fish Hatchery is underway. All buildings and structures, except the residences, were removed. Photos of the new area will be furnished next year. Total cost $686,000.

Water Skiing Area outhouse, half-moon and all.

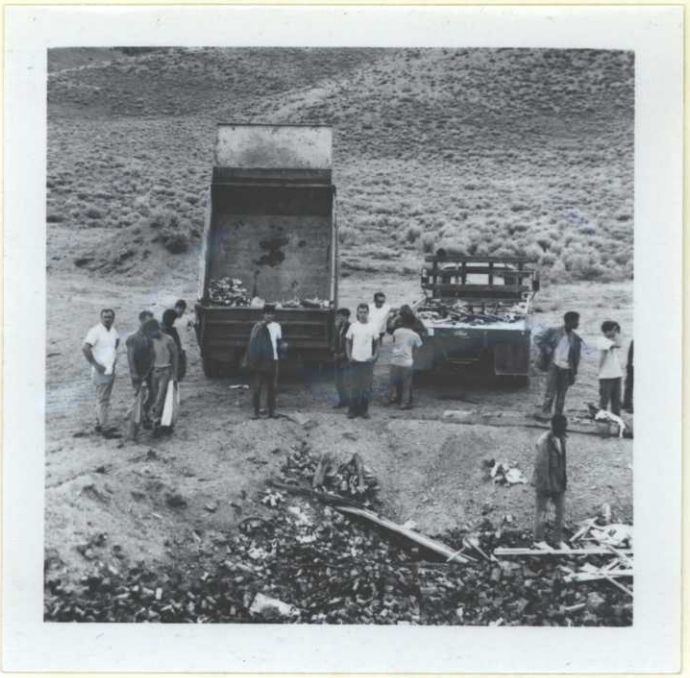
Three windmills were constructed to more properly distribute cattle grazing.

Waterfowl banding with funnel-type traps seems to provide a good cross-section of species represented on the refuge.

A portion of the 6,036 muskrats harvested in 1966.

Vegetative photo sites on Unit 21 revealed no re-growth of hardstem bulrush.

Boy Scout troops from Elko were very cooperative litter gathers. To add more fun they were allowed to pick up floating cans and bottles by boat.

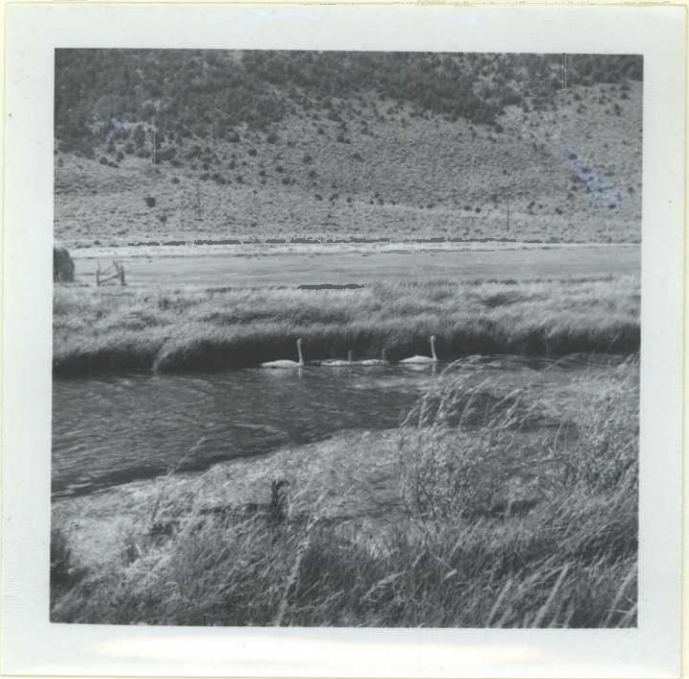


The Nevada Youth Training Center, also, provided two efficient crews for litter control.

Nevada State Fish and Game obtaining largemouths to be planted in other waters. Three hauls produced 4,300 small fish.

A sick whistling swan was retrieved for doctoring - it eventually died.

Sixty-one "Dill" type Canada goose nesting platforms will be ready for "Mama Canada" this nesting season.



Trumpeter swan reproduction reached 13 cygnets with 9 young reaching flight age.